Applying the Limits of Acceptable Change Process to Develop a Management Strategy for a Non-Wilderness Setting

Applying the Limits of Acceptable Change Process to Develop a Management Strategy for a Non-Wilderness Setting

Julie Martin
Outdoor Recreation Planner
Norwood Ranger District
PO Box 388
Norwood, CO
(303)327-4261

Clemson Class of 1993

October 8, 1994

This paper was prepared as a student project in partial fulfillment of the requirements of the Professional Development for Outdoor Recreation Management Program at Clemson University. It in no way reflect USDA Forest Service policy nor are the opinions expressed those of anyone other than the author.

Abstract

Author: Julie Martin
Outdoor Recreation Planner
Norwood Ranger District
Uncompahgre National Forest
PO Box 388
Norwood, CO 81423
(303)327-4261

Title: Applying the Limits of Acceptable Change Process to Develop a Management Strategy for a Non-Wilderness Setting.

Abstract: Limits of Acceptable Change is a planning process that was originally intended for implentation in wilderness settings. This paper applies the guidelines established in this process to develop a management strategy for a small defined Rural and Roaded Natural setting. The steps of the process were assessed relative to the existing inventories and existing conditions of the area, Forest Plan direction, and potential off-site impacts. In order for the process to be effective, some of the steps were modified. Limits of Acceptable Change is be more readily applicable to larger tracts such as wilderness areas, however, many of the components were integral to developing a plan to restore riparian resources and provide recreation opportunities. Limits of Acceptable Change can be a useful planning tool, particularly if the process remains flexible and is used as a guideline.

Keywords: Limits of Acceptable Change, dispersed recreation, riparian areas

Table of Contents

List of Figures

List of Tables

Executive Summary

The Limits of Acceptable Change planning process was employed to develop a management strategy for a dispersed recreation area. Although the process is generally applied in a wilderness setting, important components of the process were integral to restoring the riparian areas and better defining and managing the present uses. The Limits of Acceptable Change process provided a method to identify specific resource and social conditions and to set standards for those conditions that were determined to be acceptable.

The Limits of Acceptable Change process advocates active participation by citizen advisory groups to identify the issues and define the project. It also provides an opportunity to determine what management activities are appropriate or inappropriate to implement the project. Limits of Acceptable Change is an interactive approach that requires participation at all stages of the process.

A work group was established to begin the planning process and address the issues that arose through a number of previous scoping efforts. The type of use that may be appropriate in the valley was determined based on the value of the riparian resource and the current use that occurs. Through the process, a spectrum of uses that could be provided was

identified. These uses consisted of providing more development at the north end of the valley to accommodate a higher density of people while providing for a lower density of people at the south end of the valley. Measurable standards were determined that would enable us to determine if the objectives are being met.

Once the type and level of recreation opportunities were established, alternatives were developed. Two alternatives were developed and assessed as to how well each would meet the project objectives of restoring riparian habitat and managing the recreation uses. The "No Action" alternative was also considered and assessed in this process. User groups affected, extent of management presence required (law enforcement, signing, controls, etc.), potential effects to the riparian resources, and contributions to providing overnight accommodations in the Telluride area were considered in evaluating the alternatives.

The alternatives developed here will be documented and analyzed to meet the requirements of the National Environmental Policy Act (NEPA). The selection of an alternative will be made based on the NEPA analysis. This project will be implemented in conjunction with projects on adjacent public lands to avoid increasing impacts offsite that might otherwise occur if the projects were implemented separately.

Introduction

Riparian areas, by definition, are located adjacent to a body of water. Healthy riparian areas serve many important ecological functions. Riparian ecosystems provide critical elements of wildlife habitat including: food, water, and cover.

> Riparian areas have complex and diverse vegetation and land forms that provide a wide variety of food resources for wildlife. The dense vegetation protects animals from temperature extremes, provides a continuous corridor across the landscape that is used during migrations and are important fawning areas for big game mammals. Small mammals use riparian areas for den sites and many species of birds can be found nesting in riparian areas. (Kaye 1991)

Recreation activities in riparian areas are not a new concept. People have long been attracted to water based activities. People may seek the coolness offered by the shade and water; participation in water based sports such as boating, fishing, and swimming; or the serenity offered by the sounds of a stream or river. These are only a few reasons why people are drawn to water. To accommodate their activities and desired experiences, undeveloped campsites, picnic sites, and trails frequently appear near or adjacent to rivers and lakes.

The impacts created by these activities have been a source of concern for resource managers for several years. The obvious results of recreation use are typically loss of ground cover, tree damage, and excessive social trails. The indirect impacts associated with recreational use include erosion, soil compaction, loss of native vegetation, and declining tree

vigor. As a result, much of the habitat and qualities of a riparian area are destroyed.

With proper planning and management, recreation activities may occur in these areas without destroying many of the functions and qualities of riparian areas. A key to planning for recreation opportunities should be to determine what values of the area should be emphasized in management and to consider all aspects of the recreation experience being provided. The aspects would include the social setting, managerial setting, as well as the physical setting of the experience. The values to be emphasized define the overall objectives of the project and set the parameters in providing for recreational elements.

Objectives

The objectives of this project are two-fold. On National Forest land near Telluride, Colorado, recreation impacts have substantially contributed to the degradation of riparian resources. Recognizing the need to better manage the recreation use and restore the riparian areas presented an opportunity to involve the public in a planning process and to develop a strategy by which to improve the recreation and riparian resources. Simply stated the objectives are to:

- Incorporate an interactive planning process that invites public participation
- Develop a management strategy with interested citizens, community groups, and other Federal agencies to:
    - identify recreation opportunities appropriate to the area
    - establish a strategy to restore the riparian habitat
    - provide a means to educate users about impacts associated with their activities

Past Planning

In 1987, the Forest Service recognized the need to change and improve the management strategies for recreational uses occurring in the Ilium Valley. Recognizing that the resources were being overused and misused, a proposal was submitted for Capital Investment Program (CIP) funding. The proposal included construction of toilet facilities for 3 of the areas, road improvements, barrier placement, and installation of new fire rings. During the America's Great Outdoors initiative, the concept of this project was upscaled to include a full service developed campground and 4 day use areas with picnic and/or trailhead facilities. Funding approval for this project did not occur until 1993.

The environmental analysis process was started for the proposed developments in the Mary E campground. At that time, the proposal was changed to include developed sites at Sheep Corrals and South Fork. Forest resource specialists expressed concern regarding the condition of the riparian areas and the impacts that could be incurred by constructing a development of the proposed level. Alternative sites were assessed to avoid development in the riparian area. The topography in the valley is such that slopes would make construction in these areas cost prohibitive. Based on these concerns and limitations, a decision was made by the Forest Supervisor to limit activities in the Ilium Valley to day use once other campgrounds on the District were completed.

Once the decision to limit activities in the valley to day use was made, part of the funding for the Ilium Valley projects was reallocated to other Forest projects. In addition to this reduction, Capital Investment Program (CIP) funding was decreased nationwide. Because of these reductions, although the project is still being considered for CIP funding,

the timeframe for which we may receive the funding may actually be allocated has effectively been extended by 5 to 12 years.

Area Description

The Ilium Valley is located approximately 4.5 miles west of Telluride, CO, along the South Fork San Miguel River (Figure 1). The Forest Service administers 3 parcels of land amongst private residences, Nature Conservancy land, private enterprise, and a church camp. The area provides opportunities for fishing, day use, and camping. Located adjacent to the river, these areas are the only cottonwood riparian areas on Forest Service land along the South Fork river.

A popular feature of the area is its proximity to Telluride. Telluride, a year-round resort area hosts numerous festivals throughout the year, the largest being the Telluride Bluegrass Festival. During the Bluegrass Festival, anywhere from 1000 to 1500 people pitch their tents and/or sleeping bags on approximately 15 acres managed by the Forest Service in Ilium for the week long festivities. During nonfestival periods, local workers set up camp and reside in the valley for the summer.

On the 3 parcels administered by the Forest Service, 4 areas are commonly used by visitors and receive the most impact: Mary E, Vance Junction, Sheep Corrals, and South Fork (see Figure 2). These areas are characterized by dirt roads which have been established through constant use over time. Vault toilets are provided at the northernmost site. No tables are provided, although some metal fire grates were placed in the areas approximately 3 years ago. Rock fire rings are scattered throughout. Trash receptacles are not provided; litter is managed based on the "Pack It In-Pack It Out" philosophy (Appendix A - Existing Conditions).

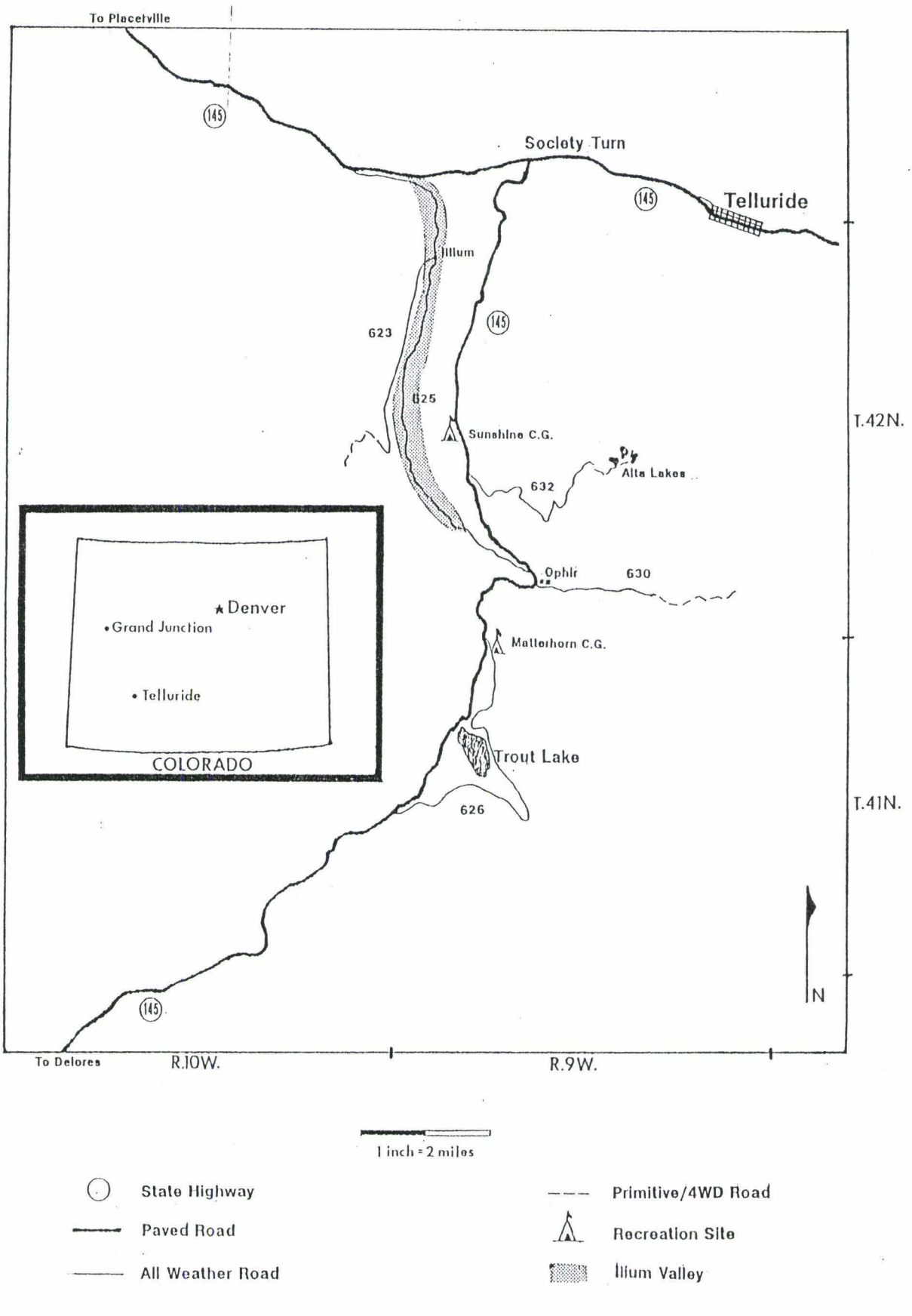


Figure 1. Location map.

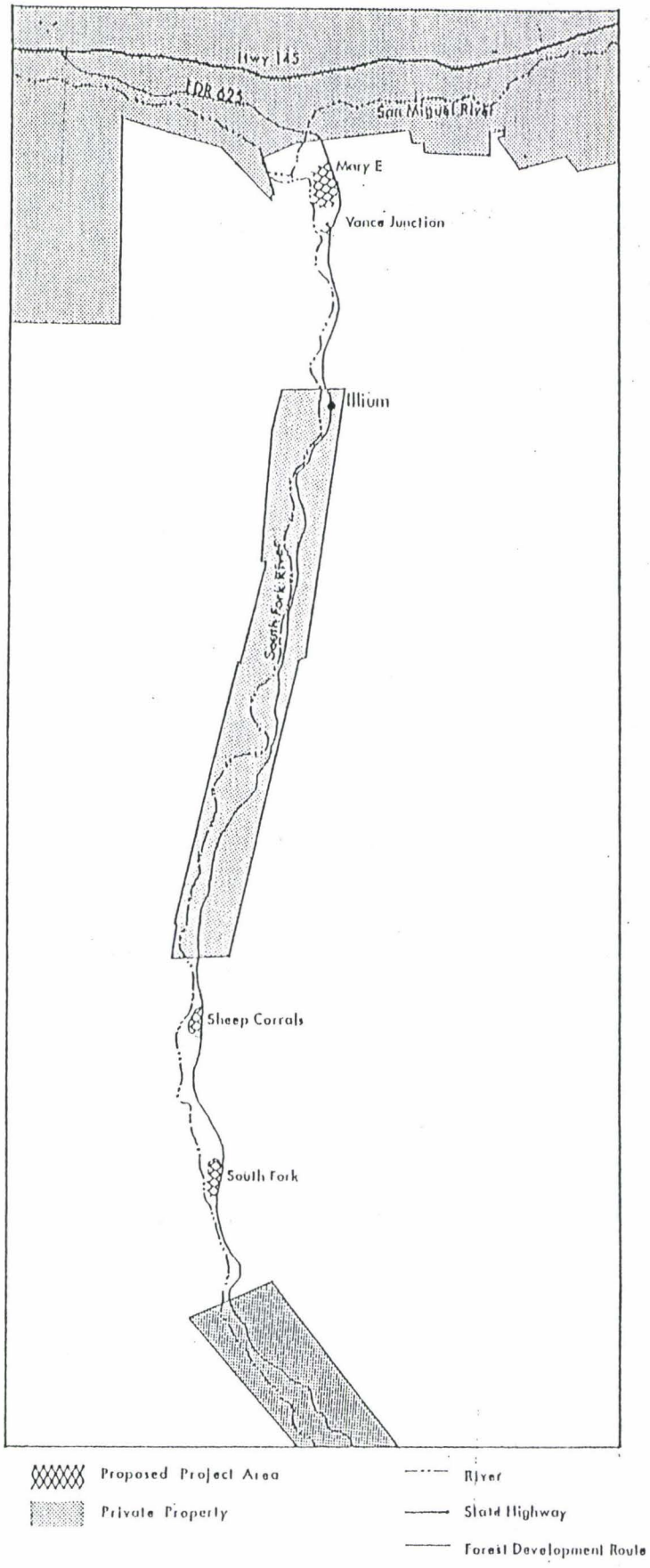


Figure 2. Area map.

Land Management Plan Direction

Management of the resources in the Ilium Valley is directed by the Grand Mesa, Uncompahgre, Gunnison National Forests Land and Resource Management Plan (Forest Plan) Management Prescription 2B. This management prescription provides for rural or roaded natural recreation experiences. Forest Plan direction requires that dispersed sites within this prescription area be closed if they cannot be maintained in Frissell Condition Class 1, 2, or 3. Those sites which are in Frissell Condition Class 4 and 5 are to be rehabilitated (see Table 1).

Table 1. Frissell Condition Classes

Condition Class	1	2	3	4	5
Visible Indicators	Ground vegetation flattened but not permanently injured. Minimal physical change except for possibly a simple rock fireplace.	Ground vegetation worn away around fireplace or center of activity.	Ground vegetation lost on most of the site, but humus and litter still present in all but a few areas.	Bare mineral soil widespread. Tree roots exposed on the surface	Soil erosion obvious. Trees reduced in vigor or dead.

Frissell, Sydney. Judging Recreation Impacts on Wilderness Campsites. Journal of Forestry, 1978. Vol 76, No. 8. p. 12.

Literature Review

Managers and researchers have been struggling for many years to minimize impacts incurred through recreational use. Commonly referred to in research as trampling, activities such as camping and hiking are responsible for soil compaction, loss of ground cover, erosion and runoff (Cole 1982, 1985, Cole and Fichtler 1983, Frissel et al 1965, James et al 1979, Kuss and Morgan 1984, Merriam and Smith 1974, Settergren and Cole 1970), and crown dieback and root exposure (James et al 1979, Settergren and Cole 1970, Bright 1986). Subsequently, several management actions have been examined in an effort to minimize the effects of recreational use.

Acknowledging that these impacts are occurring and to what extent, should lead the manager to question if simple management actions will solve the problem or if perhaps the answer may be related to the management objectives for that area. The question should be asked, can the objectives be met by implementing a management action or do the overall objectives need to be re-evaluated to reflect or change the use that is occurring.

Kuss and Morgan (1984) describe a planning method for outdoor recreation which estimates the physical carrying capacity of an area. Frissell et al (1980) and Manning (1986) caution against using carrying capacity as a fixed value which sets a definite limitation on the use that a site can sustain. Carrying capacity can be a useful planning tool, but must be viewed as an organizational framework (Manning, 1986).

Recreation research recognizes 3 elements of recreation; the environmental or physical setting, the social setting, and the managerial setting (Manning 1986, Stankey et al 1985). The Recreation Opportunity Spectrum (ROS) includes experiences in these elements and describes opportunity classes which account for those elements. The opportunity classes ranges from primitive to urban based on a combination of access, remoteness, visual characteristics, site management, visitor management, social encounters, and visitor impacts (Clark and Stankey, 1979). This planning system has been employed in developing Forest Plan management prescriptions (Clemson Recreation Short Course 1993) and is the core of many planning systems.

The ROS implies a linear relationship between the physical setting, social setting, and managerial setting (Manning 1986, Heywood et al 1991). Recent studies indicating that activites and derived experiences occurring outside of the intended opportunity class stress the importance of applying ROS, like carrying capacities, as a guideline or framework for planning (Heywood et al 1991, Virden et al 1989).

Stankey et al (1985) incorporate ROS into a nine step process (Limits of Acceptable Change (LAC)) which establishes how much impact upon the resources and the visitor is acceptable. The process, designed to address wilderness impacts, employs the ROS to define the type of use and experience an area will be managed for. The process requires deciding what kind of conditions are acceptable and then prescribes actions to protect or achieve those conditions (Stankey et al 1985). Resource and social conditions must be inventoried and monitored to assure that objectives are being met by the management actions implemented. This approach comprehensively and logically combines social, managerial, and resource

elements as an effective planning tool. As in all other planning processes, this process should serve as a guideline for planning and remain flexible.

Process

Although originally developed for wilderness planning, it appeared that many concepts of LAC were applicable to achieving the project objectives. As noted by a member of the Region 5 training cadre for LAC (1991) many elements of the process are similar to the NEPA process. One of the biggest differences "seems to be the use of 'citizen groups' or 'advisory groups'". In January 1994, a public meeting was held to initiate the process. The purpose of the meeting was to provide an update on the status of projects in Ilium Valley, to introduce the LAC system of planning, to identify any additional public concerns and to establish an advisory group to develop the management strategy. Approximately 23 people attended the meeting. An advisory group, comprised of representatives of the BLM recreation staff, valley residents, Telluride Chamber Resort Association, Telluride Institute (a local environmental interest organization), and District resource specialist, was formed.

There are 4 major components of the LAC process that allow managers to determine what resources and social conditions are acceptable and then identify management actions appropriate to maintain those conditions (Stankey, Cole, et al 1985):

1) Specification of acceptable and achieveable resource and social conditions, defined by a series of measurable parameters.

2) Analysis of the relationship between existing conditions and those judged acceptable.

3) Identification of management actions necessary to achieve those conditions.

4) A program of monitoring and evaluation.

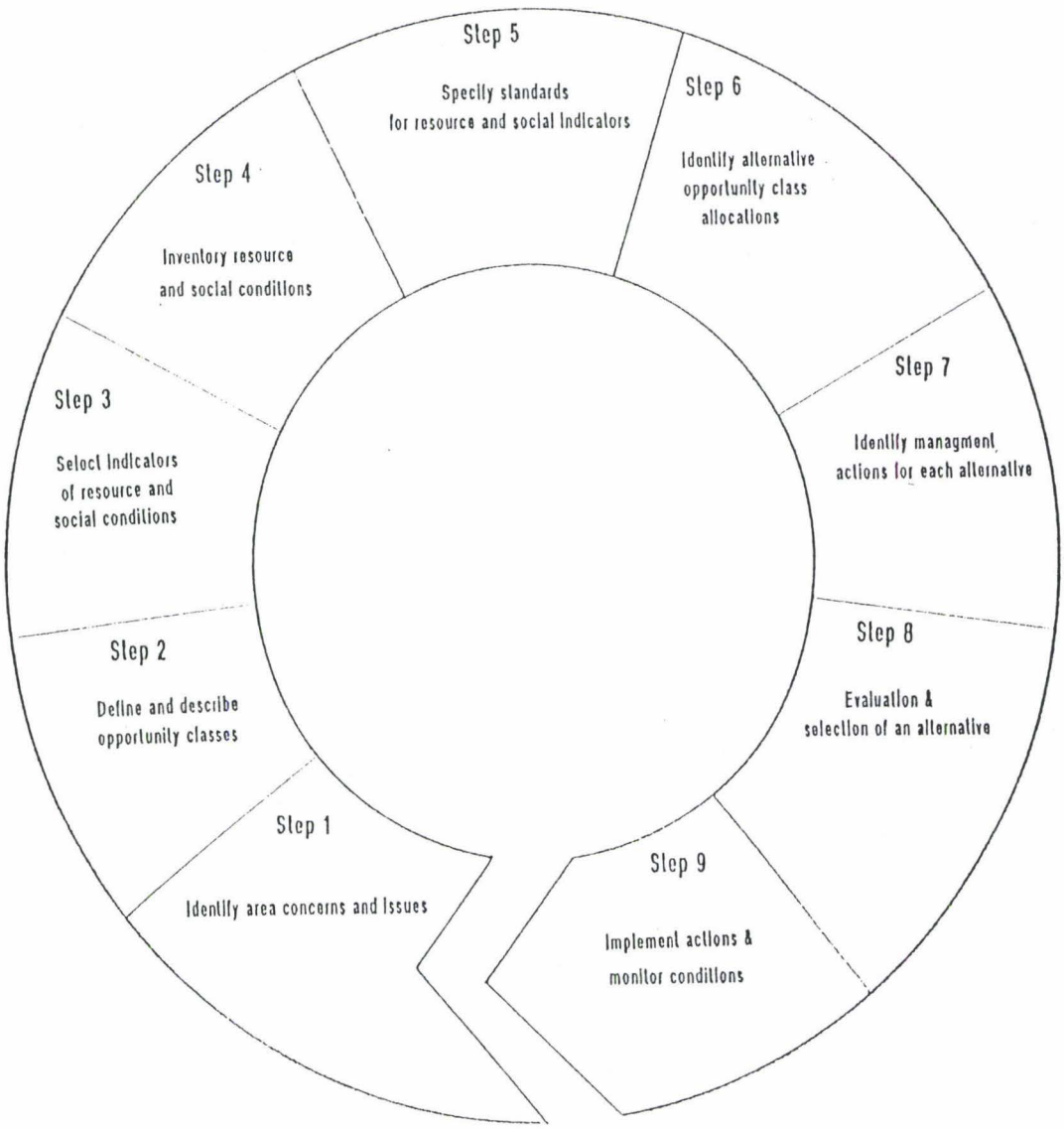
These components are further defined and broken down into a 9 step process (Figure 3). The following summary and plan is the result of the commitment and active participation of the members of the advisory group.

Issues - Step 1

Identifying issues and concerns is an important step in providing a basis for and succeeding in the planning process. It is through the identification of issues and concerns that managers are able to define the outstanding properties and/or attributes of an area and implement management actions appropriate to address the issues. Consideration should be given to local and/or regional significance of the area, as well as outstanding or unique ecological, historical, cultural, and recreational properties of the area (Stankey, et al, 1985). It is equally important in planning to define the scope of the project and to recognize what issues may be outside of that scope. These issues should be acknowledged, but it may be impractical to attempt to address them in the alternatives and analysis.

In September 1992, an interdisciplinary team reviewed the project proposals submitted for CIP funding. Based on comments received during the scoping process and interdisciplinary team input, issues regarding the development of full-service campgrounds in Ilium Valley were identified. Those issues which were specific to the existing conditions in the valley were brought forward to this project. Other issues dealt with impacts which may have occurred as a result of the larger scale development. These

Limits of Acceptable Change Planning System



Stankey, George H. et al. The Limits of Acceptable Change (LAC) System for Wilderness Planning. Intermountain Forest and Range Experiment Station, General Tech. Report INT-176. p.3.

Figure 3. Limits of Acceptable Change process.

issues were not relative to implementing the Limits of Acceptable Change (LAC) process and were eliminated from further consideration. As a result of the January 1994 meeting, additional issues and concerns were also identified. The issues relative to the scope of this project are summarized below based on interdisciplinary team and public input.

The areas identified in this project are located in riparian areas or the 100/500 year floodplain.

Located adjacent to the South Fork San Miguel river, Mary E, Sheep Corrals, and South Fork are in the only cottonwood riparian ecosystems on Forest Service land in Ilium Valley. The 100/500 year floodplain has not yet been delineated for these areas and there is some question as to which areas and/or how much of those areas will fall within the 100/500 year floodplain.

Forest Plan direction prohibits construction of overnight facilities for developed recreation sites within the 100 year floodplain or riparian system. Although somewhat contradictory in its direction, it does appear that dispersed sites and designated dispersed sites are permitted in these areas. Existing campgrounds are to be maintained in a manner so as to protect and preserve riparian and aquatic quality and to protect the life and property of the campground users (Grand Mesa, Uncompahgre, and Gunnison National Forests Land and Resource Management Plan, 1991).

Cottonwood riparian habitat in the Ilium Valley is being degraded by recreation impacts (off-road vehicle travel, camping, etc.)

As previously noted, 3 of the 4 areas proposed for management are located in cottonwood riparian areas adjacent to the South Fork San Miguel River (South Fork River). Recreation impacts have substantially contributed to the degradation of the riparian resources. Several

campsites have been established on streambanks beside the river, resulting in bank loss, trampling, soil compaction and vegetation loss (Figure 4). A survey conducted by the Youth for Environmental Services indicated that human caused tree and shrub damage are among the top three user impacts to the resources. Concern was expressed by representatives of the Nature Conservancy that off-road vehicle use was a key component of the damage occurring in these areas.

Figure 4. Vegetation loss and impacts associated with recreation use.

Existing Forest regulations are difficult to enforce and administer.

The Bureau of Land Management (BLM) administers land along the San Miguel River less than 2 miles from the Mary E site. Both the BLM and the

Forest Service administer camping regulations requiring stays of less than 14 days. Forest Service regulations require that "campers" move a minimum of 3 miles from their present location. For many valley users (transient residents), this simply means moving the 3 miles between Sheep Corrals and Mary E. Others simply move from Forest land to BLM land every 2 weeks. The BLM and Forest Service do not have overlapping or interchangeable jurisdictions i.e. a Forest officer cannot enforce regulations on BLM land or vice versa. The problem of transient residency is compounded by having only one Forest Service Law Enforcement Officer for a 3 district area. The officer must rely on district field personnel for information and feels it is difficult to establish probable cause for residency. As a result, there are individuals who literally spend the entire summer in Ilium Valley.

Ilium Valley hosts up to 1500 visitor annually for the week long Telluride Bluegrass Festival.

Telluride Bluegrass has become an annual tradition for thousands of people. The Bluegrass Festival has attracted up to 15,000 people to the Telluride area. Although a rapidly growing resort area, the town of 1300 residents can provide overnight facilities for only 3800 guests (Telluride Chamber Resort Association, 1994). Campgrounds in the area provide approximately 70 sites where water and restroom facilities are available. As a result, thousands pitch their tents and/or sleeping bags on Forest, BLM, county, and private lands (Figure 5). Recently, San Miguel county has required the promoter to acquire a special use permit and manage the random camping occurring as a result of the festival. The Norwood Ranger District has also required the promoter to manage the use occurring in the Ilium Valley under a special user permit.

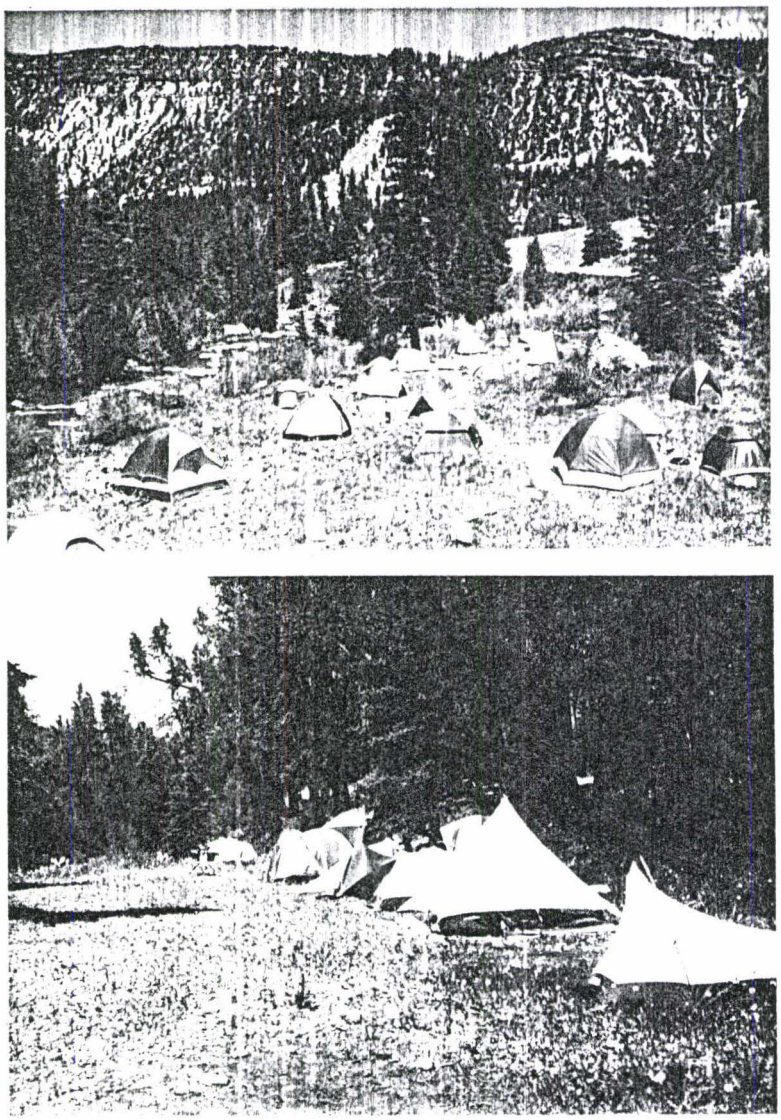


Figure 5. Valley users during the Telluride Bluegrass Festival.

The permit requires the promoter to provide trash receptacles, sanitation facilities, and a group of individuals referred to as the E-Team to monitor environmental impacts and educate valley users about low impact camping techniques. A fee is collected at the entrance of the valley by the promoter as a provision of the permit. Operating the valley by special use permit has considerably reduced the incidence of improper human waste disposal and has helped to limit the number of people who can camp in the valley.

Although impacts have substantially decreased, impacts to the riparian and aquatic resources are still occurring. People continue to camp within 100 feet of the river, down logs and shrubs are sacrificed for firewood, and people continue to use the river for bathing and/or washing utensils. The number of fire rings constructed during Bluegrass increases as does the incidence of litter. The employment of the "E-Team" to monitor and correct these activities has helped to reduce many of the impacts incurred.

Sanitation facilities provided at Mary E are inadequate for the use that occurs at the 4 locations.

There are currently 2 single unit toilets on a single sealed vault in Mary E which were constructed approximately 20 years ago. During the summer months, festival goers, Telluride tourist, and transient residents are frequent visitors to the valley. More often the visitors will arrive in make-shift trailers, small camp trailers, or tents rather than self contained recreational vehicles. The toilets at Mary E do not adequately provide for use occurring throughout the valley.

Habitat for the Canyon Bog Orchid is present.

Surveys conducted in the valley identified the presence of the Canyon Bog Orchid in the South Fork site. This plant is currently listed as rare by the State of Colorado, but is not listed by the U.S. Fish and Wildlife Service. The Canyon Bog Orchid is specific to wet soils near the river channel.

Land ownership in Ilium Valley is a mixed pattern of federal and private land.

As a result of ownership patterns, differing and sometimes conflicting management activities occur on private land within the valley. One example might be Nature Conservancy land at the southern end of the valley. The Conservancy is presently managing this property to maintain intact and healthy riparian ecosystems. Less than 5 miles down river, at the confluence of the South Fork and San Miguel rivers, is a fairly extensive gravel mining operation. There is also the possibility that a lodge which will promote fly fishing will be constructed on a privately owned parcel of land between Mary E and Sheep Corrals.

Issues identified, but are outside of the scope of this project.

- The water quality of the South Fork San Miguel and the San Miguel rivers is diminishing as a result of sediment loads from mine tailings and local residential and recreational uses.
- Resolution to Telluride Gravel trespass suit.
- Transient residency is a local problem resulting from the high costs of housing. The problem is experienced on state and private, as well as federal lands throughout the Telluride area.

Opportunity Classes

Opportunity classes described by the ROS system are integral to the LAC process. An opportunity class establishes general guidelines for managing the resource, social, and managerial conditions of an area. Stankey, Cole, et al, point out that the opportunity class should describe a range of conditions that are likely to be achieved or mantained and are not intended to be on-the-ground allocations (1987). The opportunity class selected should reflect existing conditions, as well as the desired conditions for an area.

The Grand Mesa, Uncompahgre, and Gunnison National Forests Land and Resource Management Plan incorporates the ROS system to provide standards in the management prescriptions. By Forest Plan allocation, Ilium Valley is located within a Rural/Roaded Natural management prescription areas. The advisory group reviewed ROS class descriptions and the existing conditions. It was determined that existing characteristics and features in the valley would prohibit achieving the qualities of any class more primitive than Roaded Natural. Considerable discussion was given to the type of experience to be provided and what values were desired to be maintained within the valley.

Factors considered in determining an appropriate opportunity class(es) included: level of social contact desired, impacts to riparian resources, desired condition of riparian resources, degree of site modification, facilities desired, and the level of management presence required. Based on the existing features and level of developments, a natural continuum of user densities and impacts occur in the valley. A main focus of land managed to the south (Nature Conservancy) and downstream on the San Miguel river (BLM), is to maintain a healthy riparian ecosystem. A logical progression emphasized complimentary management objectives on Forest land between the two entities. The advisory group recognized that existing uses in the valley must be considered when determining opportunity classes.

In an effort to meet the desired conditions of restoring riparian resources and to provide opportunities for recreational uses, the existing continuum will be enhanced. South Fork will be managed for Roaded Natural opportunities. A subclass, Rural/Roaded Natural will be provided at Sheep Corrals and Vance Junction, and a Rural setting will be provided at Mary E.

Following is a description of the resource, social, and managerial conditions desired.

Roaded Natural

The roaded natural class will include the area adjacent to private inholdings (Nature Conservancy) which are managed for low density, low impact day use activities. Low density, low impact activities will be encouraged to compliment the activities on adjacent lands. The opportunities for social encounters will be low to moderate. Regulations and management activities will be very evident until impacts from past uses noticeably change. User education programs will be integral to maintaining this class. Motorized access will be limited and/or restricted in some areas. Those access roads that remain open may be improved but will harmonize with the natural surrroundings.

Rural

Opportunities for social encounters in the rural class will be high. Adjacent sites may be readily visible based on proximity and available space. Facilities and site furniture (tables and grills) will be provided to minimize user impacts. Access roads may be surfaced. Sites in Frissell condition class 3-4 may be common. Facilities/structures may be constructed of some synthetic materials, but should harmonize with the natural surroundings. Regulations and managment presence may be readily evident in this setting.

Indicators, Standards, and Management Actions

The issues identified in the first step define what needs to be addressed by management actions. The opportunity class sets the parameters for addressing the issues and the appropriateness of the management actions. By categorizing the issues into Resource and Social Factors, related concerns may be identified. For example, riparian conditions were identified as an issue; campsite conditions, although not previously identified as a separate issue, were identified by the team as an additional factor that should be addressed. Once factors have been defined to reflect the issues, indicators should be identified that address more specific aspects of the issues. The indicators represent what will be measured on the ground and determine whether the management objectives are being met.

Standards provide the measure against which change will be considered acceptable or unacceptable, thus establishing the limits for acceptable change. When more than one opportunity class is represented, it may be appropriate for the standards to move in a gradual progression from class to class (Stankey, et al, 1987). It is also acceptable for different opportunity classes to share the same standards.

Management actions should fit within the guidelines established by the opportunity class designation. The proposed actions should consider economics, appropriateness to the area, and ability to achieve the objectives. In determining if the actions are consistent with the opportunity class, the existing conditions should be evaluated against the desired conditions. If a new opportunity class has been defined for an area, the short term management action may be inappropriate to that opportunity class. In the long term, as use changes, management actions

should also be changed to maintain and/or achieve consistency with the class designation. The factors, indicators, standards, and managment actions selected for Ilium Valley are detailed in Table 2.

Alternatives

The LAC process suggests developing alternatives based on opportunity class allocation. The project area in Ilium is approximately 15 acres, in contrast to the thousands of acres in wilderness management. The physical scope of the project area and the existing level of developments limit the options for alternative development of this type.

A guideline in developing the management strategy was to consider the economic constraints of implementation. Although facilities for an urban experience could be provided, previous analysis of this level of development indicated that it may be cost prohibitive. For this reason, options to provide an urban setting will be addressed through acquistion of the State section (T. 43N., R. 10W., Sect. 36) located between Forest Service and BLM land. If the Forest Service is successful in acquiring this section, a joint effort could be pursued with the BLM to develop an urban campground and possibly an education/interpretive facility.

Within the Rural/Roaded Natural opportunity class, two alternatives were developed which address different management actions.

Alternative 1

This alternative emphasizes riparian restoration. Day use would be provided at all sites except Mary E. The intent of this alternative was to maximize opportunities for riparian recovery and to offer recreation opportunities that encourage low impact use. Overnight facilities were proposed at Mary E to accommodate the

Table 2. Factors, Indicators, Standards, and proposed Managment Actions.

Rural/ Roaded Natural Setting

Resource Factor	Indicator	Standard	Management Action
Riparian conditions	Diversity	* Seral score 60-70% (R2 Scorecard for Seral Stage)	Maintain/perpetuate cottonwood & Englemann/Blue spruce where present
	Species composition	* Seral score 60-70% R2 Scorecard for Seral Stage)	Assess current ecological cond. Prescribe appropriate mgmt actions
		* Weed species maximum score <5 (as above)	Require weed free hay for horseback users
	Streambank stability	* Mod/High based on R2 Channel Stabilization Rating	Assess current conditions & determine impacts on & off site Prescribe approp. mgmt. actions
	Canyon bog orchid	Inventory and map existing populations	Avoid known locations. Prevent damage/impacts within habitat
	Instream flow regime	Maintain > 6.5 cubic feet per second	Monitor
Wildlife conditions	Neotropical migratory birds and small mammals	Breeding & nesting habitat present	Retain snags/cull trees, down logs, & species composition
	Presence of amphibians	Inventory and map existing populations	Protect & enhance wetlands
	Beaver presence/activity	Maintain 1 breeding pair per 3 mile stretch	Maintain beaver population within carrying capacity. Manage excess or problem beaver
Use site conditions	% bare ground	Frissell Conditions Class 3	Close and rotate use areas Close sites in Frissell condition class 5
	# of sites	0-3 sites/acre	Close and revegetate excess sites Establish designated & hardened sites Close sites within 100' of river
	# of fire rings present	0 visitor constructed fire rings acceptable	Destroy excess fire rings Establish/provide designated fire grates User education programs
	Presence of litter	Not left over 48 hours	Provide garbage receptacles User education programs
	Presence of human waste	0 incidence acceptable	User education programs Provide facilities

* See Appendix B

Rural Setting

Social Factor	Indicator	Standard	Management Action
Noise	Barking dogs present	1-3 complaints to Host or field	Regulation restricting leaving pets unattended
	Loud music	No loud noise before 6 a.m. or after 10 p.m.	User education/ethics
Proximity	Visibility/distance between sites		Develop & implement vegetation mgmt plan Designate sites in design and construction
Social encounters	# of sites	1-3 sites/acre	Close & revegetate exess sites
	# of encounters	5.0 - 7.5 PAOT/acre	Limit number of sites & users in design
	# of reported user conflicts	1-3/month	User education programs Campground host program
User type	Presence of transient residency	0 residency acceptable	Increase distance for required move
		0 permanent structures acceptable	Incorporate prohibition on leaving site unattended for prolonged periods (24-48 hours) CO-OP Law enforcement with BLM and county
User conflicts	Mode of travel	Distribution equity in types of sites provided	Separate through design, RV vs. tent use
			Designate area for horseback users Provide entrance sign to illustrate intention of design
Party size	# of people/site	5-7 persons/site	Area info for alternative camping opportunities
	# of vehicles/site	1-2 vehicles/site	Restrict parking to hardened area

Roaded Natural Setting

Social Factor	Indicator	Standard	Management Action
Noise	Barking dogs present	1-3 complaints to Host or field personnel	Regulation restricting leaving pets unattended
	Loud music	No loud noise before 6 a.m. or after 10 p.m.	User education/ethics
Proximity	Visibility/distance between sites		Develop & implement vegetation mgmt plan Designate sites in design and construction
Social encounters	# of sites	0-2 sites/acre	Close & revegetate excess sites Limit number of sites in design
	# of encounters	.8 - 1.2 PAOT/acre	Encourage low user density type of activities
User type	Presence of transient residency	0 residency acceptable	Increase distance for required move
		0 permanent structures acceptable	Incorporate prohibition on leaving site unattended for prolonged periods (24-48 hours) CO-OP Law enforcement with BLM and county Campground host program
User conflicts	Mode of travel	0 encounters of motorized vs foot	Restrict motorized access to parking area
			Designate area for horseback users

present use in the valley (Figure 6). Features of this alternative includes:

Sheep Corrals: Restrict motorized access and construct designated parking areas. Provide facilities for single and group picnicking, toilets, and river access trails. Harden and designate use sites with materials that will blend/harmonize with the natural surroundings.

Mary E: Construct facilities for minimum development overnight use. Provide toilets, river access trails, designated and hardened sites, site furniture (tables and fire grates) and water hydrants. Roads may be surfaced (e.g. gravelled). Synthetic material may be used, but should blend/harmonize with the natural surroundings.

Alternative 2

This alternative provides for riparian recovery and diversity in overnight use opportunities. Like Alternative 1, this alternative provides for a minimum development overnight facilities at Mary E (Figure 7). Features of this alternative include:

Sheep Corrals: Provide facilities for picnicking, toilets, river access trails and designated overnight use sites. Restrict motorized access and construct designated parking areas. Trails will be defined to the sites to reduce impacts created by "social" trails. Sites will be hardened and designated but will blend/harmonized with the natural surroundings.

Mary E: same as Alternative 1

Actions Common to All Alternatives

The following actions are common to all alternatives:

South Fork: Day use with no designated sites for facilities. The existing access road would be blocked to restrict motorized access. Site rehabilitation projects would be implemented to reduce soil compaction and further restore the riparian area. Low impact, low density activities would be permitted in this area (Figure 8).

Vance Junction: Continue to restrict motorized access. Prohibit overnight use and encourage low impact, low density day use activities. Implement vegetation restoration as appropriate (Figure 9).

In accordance with the Forest Plan, all facilities will be located 100 feet from the river.

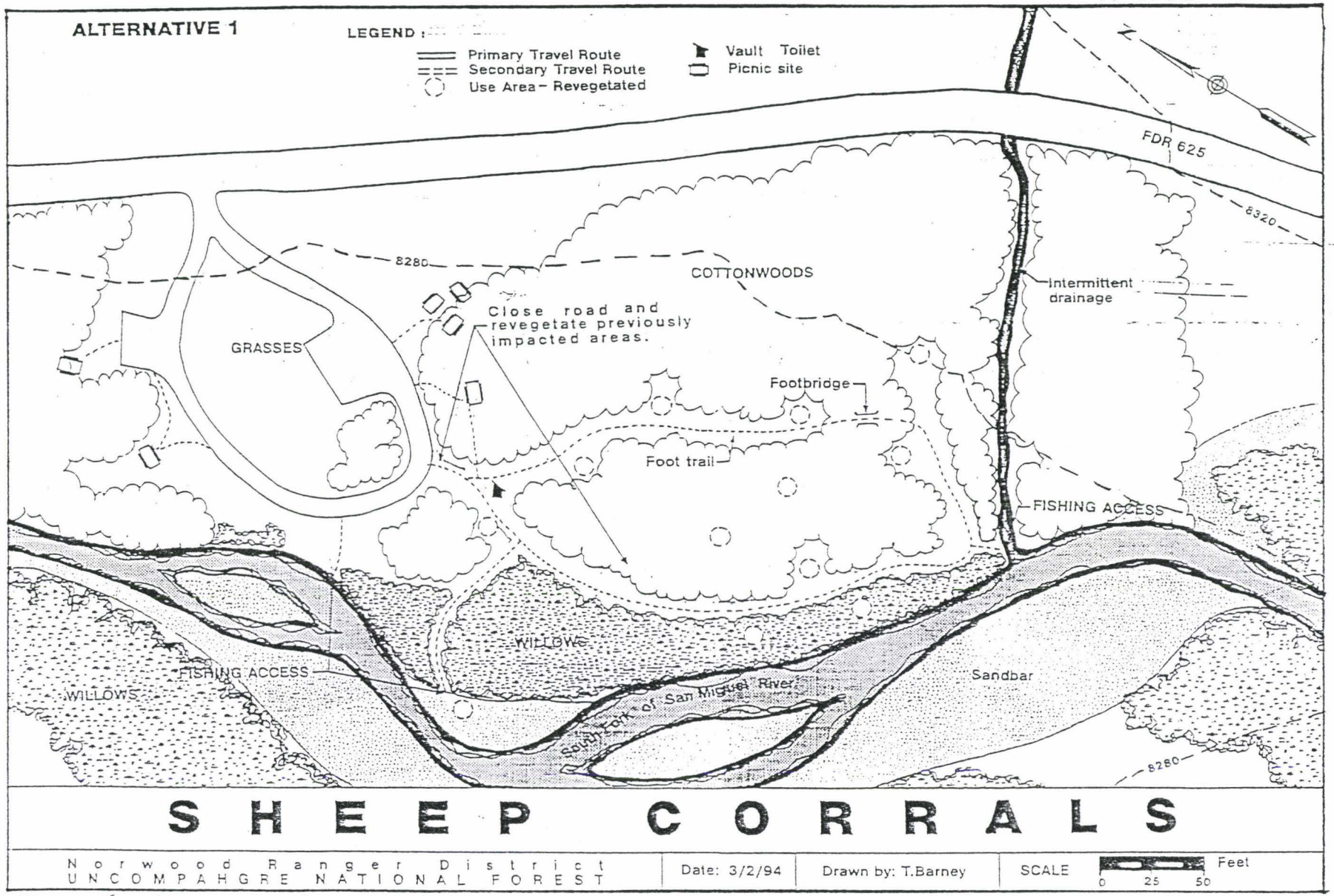
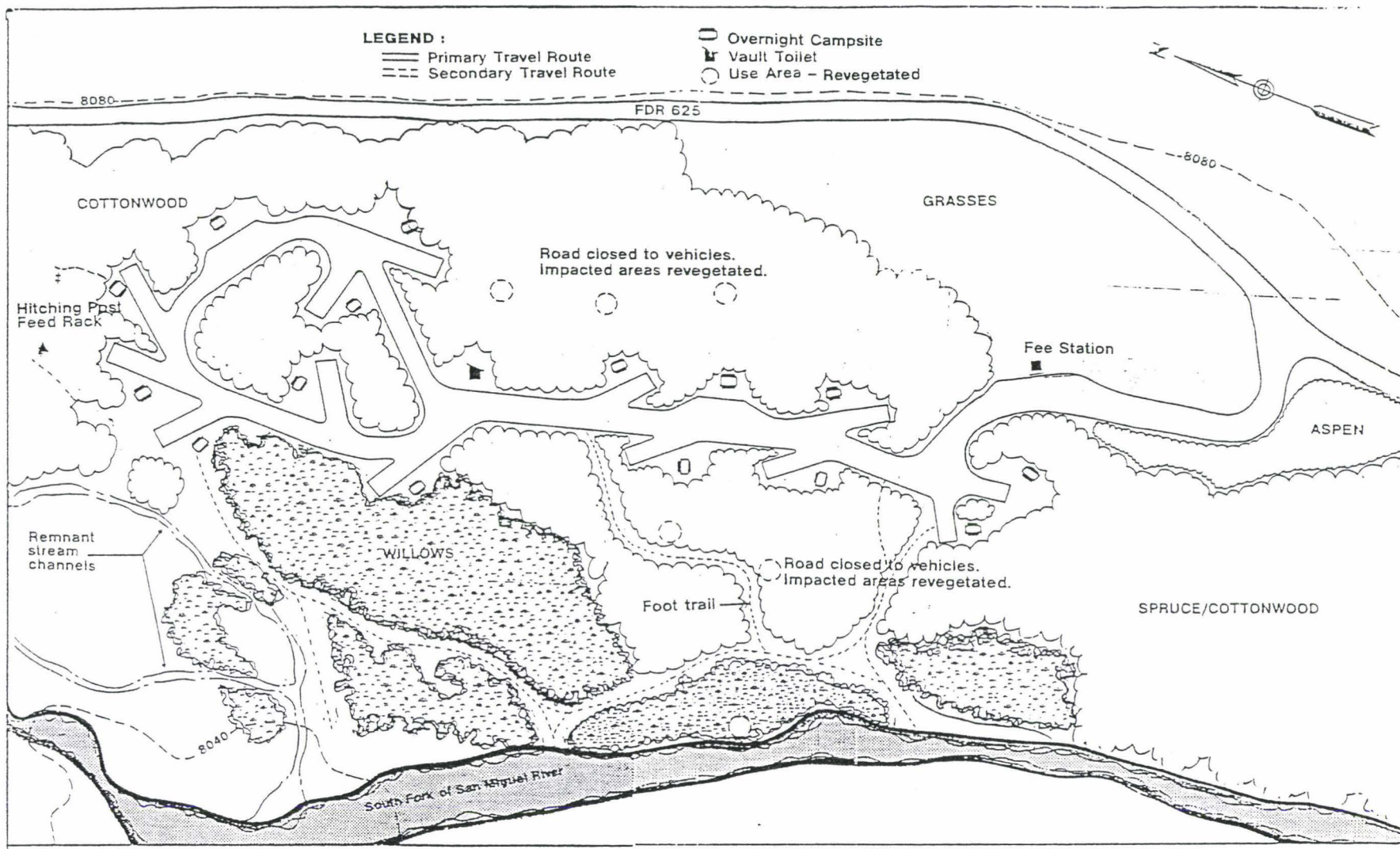


Figure 6. Alternative 1



MARY E CAMPGROUND

Norwood Ranger District UNCOMPAHGRE NATIONAL FOREST	Date: 3/2/94	Drawn by: T.Barney	SCALE	Feet 0 50 100

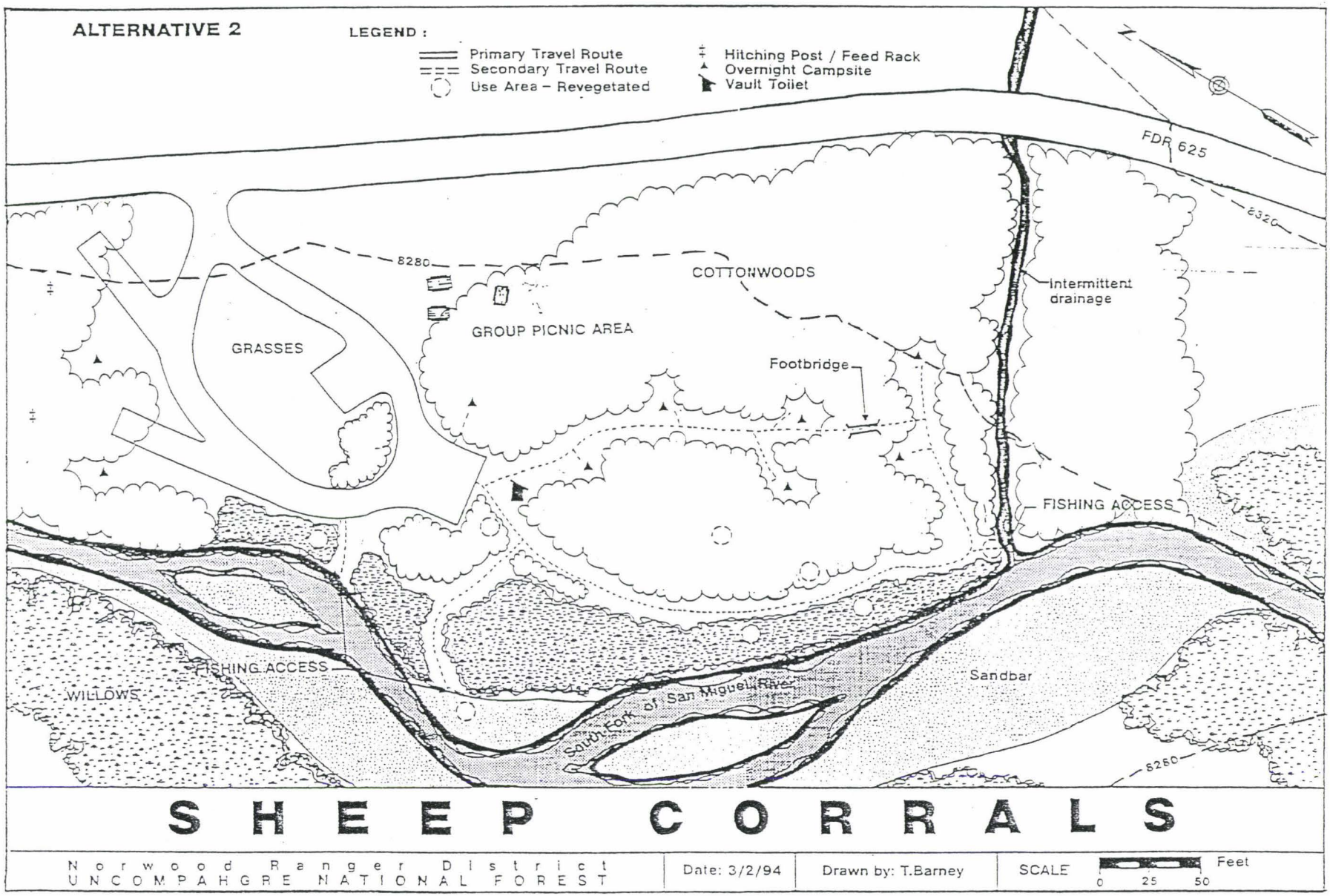


Figure 7. Alternative 2

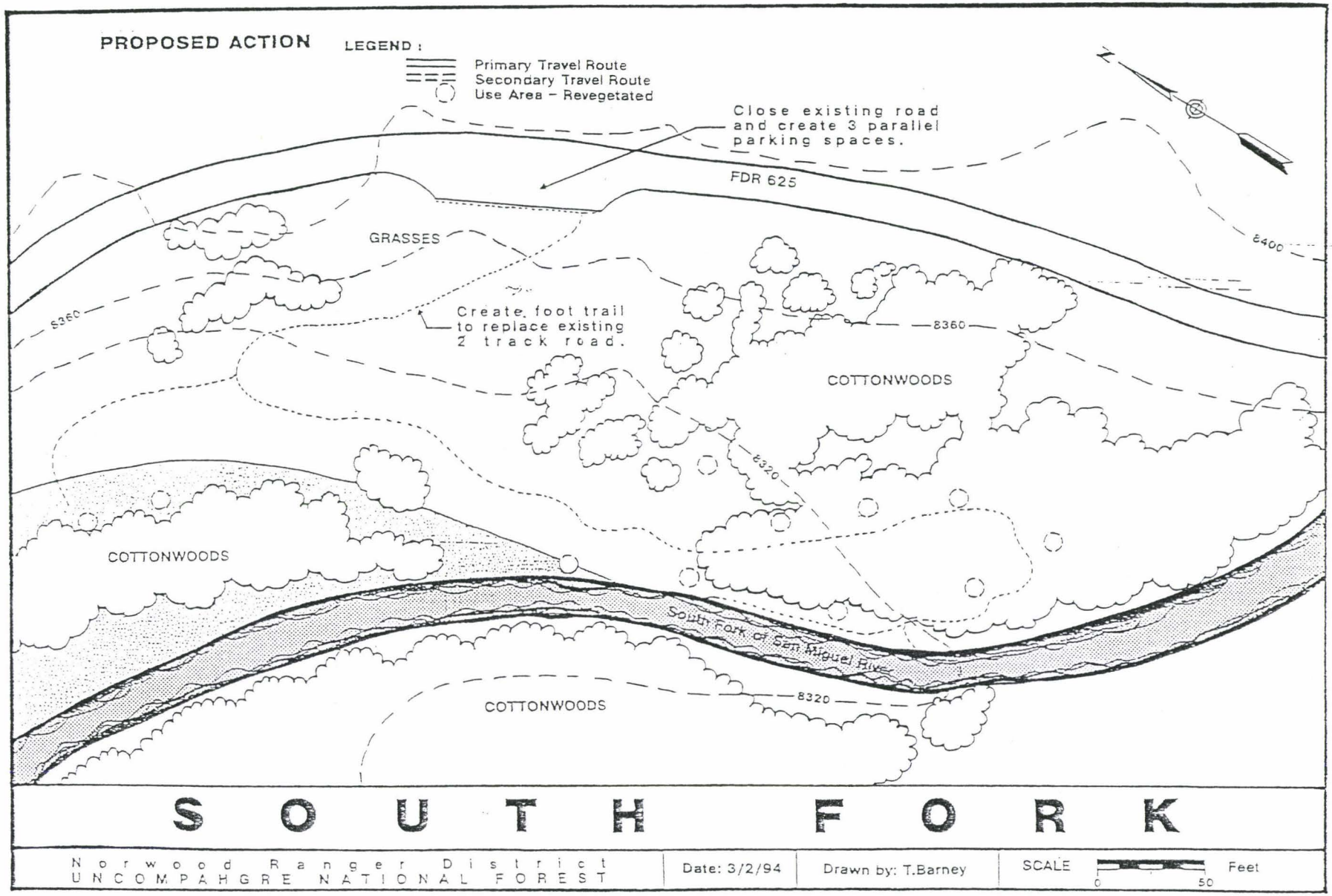


Figure 8 Proposed actions for South Fork Use Area.

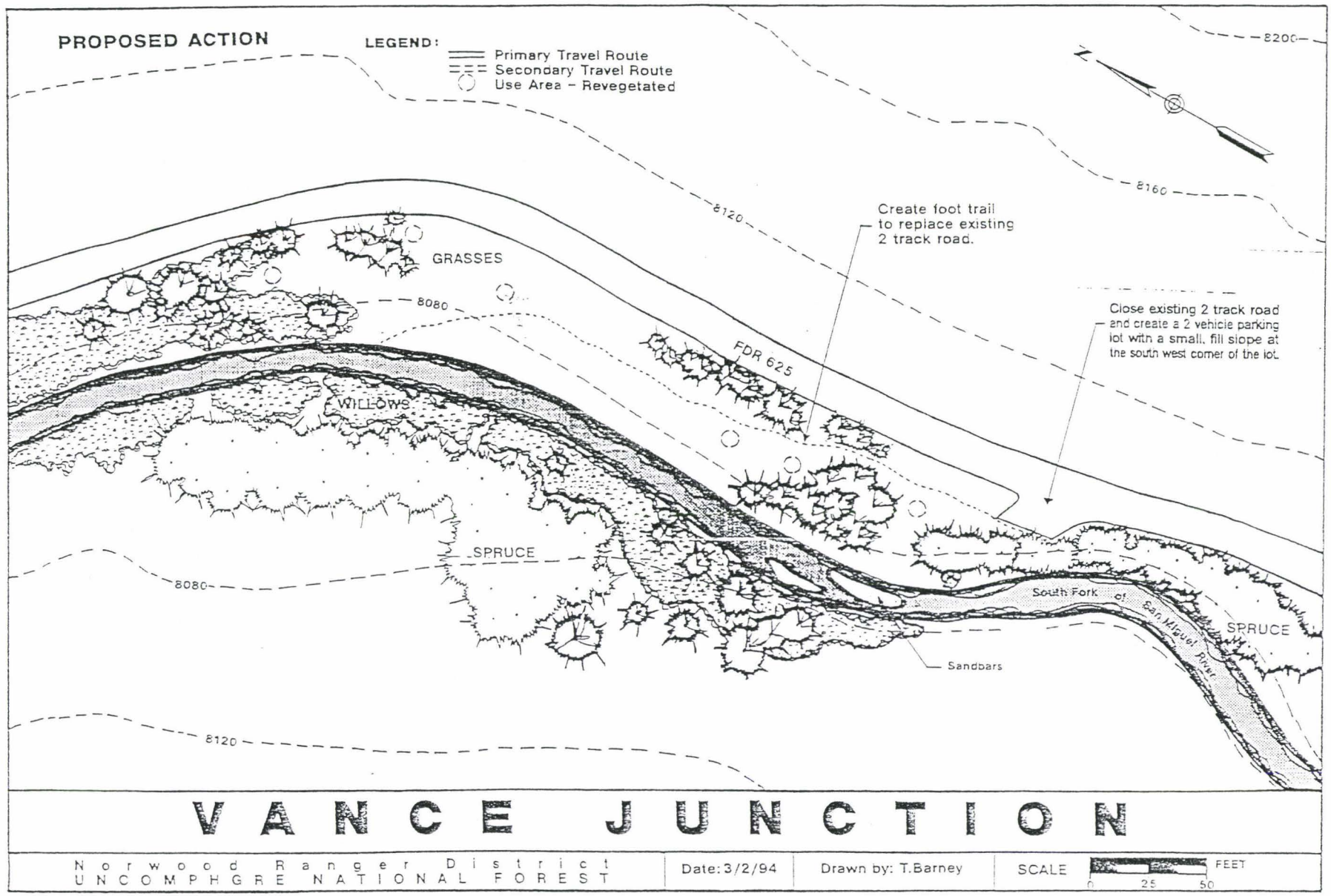


Figure 9. Proposed action for Vance Junction Use Area.

All facilities will be designed and constructed to meet standards of the Americans with Disabilities Act.

The floodplain will be delineated for Sheep Corrals and Mary E. Any overnight facilities provided in these areas will be located out of the floodplain and/or the area will be signed appropriately regarding the potential flood hazard.

A vegetation management plan will be developed and become an appendix to this document.

A user education program will be developed and become an appendix to this document.

A baseline inventory of the following resources will be conducted as per the Implementation Schedule (Appendix C): Greenline transects of riparian vegetation, campsite conditions, stream profile transects, bird surveys, streambank stability survey.

Evaluation of Alternatives

The LAC process suggests several factors that might be used as guidelines in evaluating the proposed alternatives. The advisory group incorporated the suggestions of the LAC report and additional factors that were specific to the area to conduct a comparative analysis of the Action and No Action alternatives. The following criterion served as a basis for evaluating the alternatives: user groups affected, responsiveness to issues, responsiveness to project objectives, responsiveness to regional and/or local demands, potential management implications, and responsiveness to Forest Plan direction. A descriptive assessment of the alternatives is provided relative to the criteria elements.

Potential User Groups Affected

Three user groups were identified that may be impacted by the alternatives: Bluegrass Festival attendees, transient residents, and horseback enthusiasts. Both festival goers and transient residents represent "historical" uses of the valley which would be displaced to other areas of public and private lands. Implementation of either alternative would require increased monitoring of these areas to prevent a situation like that in Ilium from occurring elsewhere. A key element of any alternative would be coordination with the BLM to resolve similar problems that may arise from project implementation.

Use by horseback enthusiasts would continue to be permitted, although there would be restrictions on where this use is allowed. Developing specific provisions for horse use will limit impacts incurred through trampling, introduction of non-native vegetation from feed, and possible tree damage.

Selection of the "No Action" alternative would continue to provide for Bluegrass and possibly other large festival promoters to use the valley facilities. Transient residents will continue to seek asylum from the astronomical costs of Telluride housing. Hunters will continue to be allowed to bring in horses and without restrictions.

Responsiveness to Project Objectives

Riparian Restoration - Both action alternatives provide for riparian restoration opportunities. Alternative 1 maximizes opportunities to accomplish restoration. By providing more areas for day use activities vs overnight stays, lower impact activities are expected. Day use activities typically occur over a short time span, where overnight use is typical of longer term, more concentrated impact area.

Alternative 2 also provides for riparian restoration opportunities. By providing a designated parking areas with designated walk-in/ bike-in sites, use and impact wil be concentrated onto hardened areas. Designating sites will increase opportunities to restore sites presently located by the river and the sites which will no longer be used.

Provide Recreation Opportunities - The "No Action" and both action alternatives provide for recreation opportunities in the Rural and Roaded Natural opportunity classes. While Alternatives 1 and 2 both provide for

overnight and day use activities, Alternative 1 will encourage more day use. Alternative 2 will provide for more diverse overnight use.

Responsiveness to Issues

Bluegrass Use - Both action alternatives incorporate designated sites into the design. Increased use beyond the capacity established by the design would, therefore, be limited. Both alternatives could displace up to 900 users during major festival events. Alternative 1 could accommodate approximately 75 persons at one time (PAOT), while Alternative 2 may accommodate approximately 115 users.

Both alternatives would eliminate random and intensive use, restrict camping by the river, and reduce human waste and other impacts associated with festival use. Unless the Town of Telluride and San Miguel County change the cap on attendance or require the promoter to lease private land, the use displaced from Ilium Valley will have to be managed on other areas of the Forest and BLM.

The "No Action" Alternative supports up to 1000 in the valley during Bluegrass. The promoter or a concessioned operation will manage the valley during this period and will be required to provide sanitary and garbage facilities. Intense use will continue to occur along the river.

Riparian Conditions - See Responsiveness to Objectives

Law Enforcement and Management Implications - While the intention is to reduce law enforcement needs over time, both Alternative 1 and 2 may initially require additional law enforcement to successfully implement this project. Additional law enforcement may also be required in other areas,

as the historical users of Ilium are displaced. The Forest Service, BLM, and San Miguel County Sheriff Office will be working jointly to develop a plan by which to curtail the biweekly move of transient residents on public lands and minimize residency violations.

An environmental education program will be implemented in both alternatives in an attempt to increase visitor compliance and minimize riparian impacts. It is hoped that such a program will reduce the overall law enforcement needs.

Sanitation Facilities - In both Alternative 1 and Alternative 2, sanitation facilities will be provided at both Mary E and Sheep Corrals. As both Vance Junction and South Fork will be low impact day use areas and are located within 1/2 mile of either Mary E or Sheep Corrals, no facilities are proposed for these areas. Garbage receptacles will be provided at both Mary E and Sheep Corrals. Vance Junction and South Fork will continue to be managed on the "Pack It In/Pack It Out" basis.

The No Action alternative will continue to provide vault toilets at Mary E. No facilities will be provided at Sheep Corrals, Vance Junction, or South Fork. No garbage receptacle will be provided at any area.

Canyon Bog Orchid Habitat - The bog orchid habitat is located in an area proposed for low impact day use activities and riparian restoration. Either action alternative would provide maximum protection of habitat located in this area.

The No Action alternative would continue to allow use which may eventually encroach and threaten the habitat area.

Land Ownership Patterns - The alternatives were developed based on the spectrum of opportunities appropriate for the valley and management objectives on adjacent lands. Potential impacts to adjacent landowners were also considered.

Responsiveness to Regional and/or Local Demands

The Telluride Region National Forest Recreation Strategy developed in 1991 cited a need for an additional 250 developed camp units. Alternative 1 would contribute 15 units towards meeting this demand. Alternative 2 would provide 23 units. The "No Action" Alternative would contribute no units. A summary of the comparisons by element may be found in Table 3.

Responsiveness to Forest Plan direction

Facilities provided in overnight use areas will be located outside of the floodplain. Excess use sites will be closed and rehabilitated in both Alternatives 1 and 2. The sites in these alternatives have been designed to minimize impacts to the riparian habitat and are located 100 feet or more from the river and are designed .

Development scale 3 and 4 facilities are described for Roaded Natural and Roaded ROS classes respectively in the Forest Service Manual 2300.3 (Appendix D). Both Alternatives 1 and 2 provide for Development Scale 3 (Roaded Natural) facilities in Sheep Corrals and Development Scale 4 (Rural) facilities in Mary E. As Forest Plan direction suggests development scale 1 and 2 facilities for rural/roaded natural dispersed recreation, an amendment to the Forest Plan may be required with the selection of Alternative 1 or 2.

Selection of the "No Action" alternative mandates Forest Plan compliance with the Standards and Guidelines for Management Prescription 2B. In order to be in compliance with this direction, it may be necessary to close a majority of the dispersed sites in the Ilium Valley for rehabilitation. All sites within 100 feet of the river would be closed. Regulations and law enforcement would be maximized. Subsequent impacts to BLM land would be increased.

A preferred alternative was not selected at this time. It was agreed by the team that selection of an alternative would be based on the acquisition of the state land in Section 36. If this land were acquired, Alternative 1 was preferred so that the area for riparian restoration may be maximized. If the land were not acquired, Alternative 2 was preferred, based on maximizing overnight use while providing for riparian restoration. (See Table 3 for a comparative summary of the alternatives.)

The alternatives developed here will be documented to meet the requirements of the National Environmental Policy Act. The selection of and alternative would then be based on the NEPA analysis. There are, however, several actions proposed in this strategy which are not major federal actions as defined by the Code of Federal Regulations and therefore do not require NEPA documentation to implement. Such actions include: riparian restoration efforts, restricting motorized vehicle access, closing areas to overnight use, and providing garbage receptacles. Based on approval of this document, these actions may be implemented as funding permits. (See Appendix C for proposed implementation schedule).

Table 3. Comparative summary of the alternatives based on issues addressed

Factor	No Action	Alternative 1	Alternative 2
Bluegrass use	Continue at present level	Provides for no increase from designated capacity	Provides for moderate influxes in designated capacities
Hunter/horse use	No hunter/horse restrictions	Eliminates random horse camps	Provides for designated horse use area.
Transient Residency	Continues with present patrols	Eliminates/displaces transient use.	Eliminates/displaces transient use.
Access	No access restrictions	Restricts random motorized access	Restricts random motorized access.
Riparian Degradation	Continued use and level of degradation	Minimizes degradation maximizes rehab opportunities.	Reduces degradation Provides limited rehab opportunities
Overnight Use	Continued use type and level	Provides limited overnight facilities	Maximizes overnight use.
Sanitation/ Solid waste	Toilets at Mary E only. No garbage services	Provides toilets and garbage services	Provides toilets and garbage service
User Fees	No fees/limited funds to manage	Possible day use and overnight use fees	Possible day use & overnight use fees
Law Enforcement	Continue at present level	Increase in on-site contacts and user education	Increase in on-site contacts and user education

Summary/Conclusions

The LAC process can be a valuable planning tool. However, it may not be appropriate for every project. When determining if the LAC process is appropriate for other projects, it is important to consider what the desired outcome is intended to be, the circumstances associated with the project, and the existing conditions of the project area. Limits of Acceptable Change shares many similarities with the NEPA process. The outcome of LAC is not a NEPA decision, but many parts of the process may be incorporated into the analysis.

Although area limitations are not established by LAC, the process is more readily applied to larger tracts of land that are not intermixed with numerous private land tracts. In smaller, more developed areas, many elements of LAC are established by the level of development on adjacent land and existing conditions. Selection of an opportunity class in the Ilium Valley was basically defined by management objectives of adjacent private land owners, topographic features, Forest Plan direction regarding development in floodplains, and economic constraints. Application on large tracts would not be restricted by the narrow boundaries imposed by these factors.

When addressing resource factors in a non-wilderness setting, the knowledge of existing conditions may be considerably greater based on familiarity with and the limited size of the area. Although some preliminary inventories of campsite conditions have been conducted, there

was enough familiarity with the area among the team members that standards could be reasonably established. Once baseline inventories are completed, adjustments may be made in the standards as appropriate. The inventories will also serve as a baseline for analyzing data collected through future monitoring.

Forest Plan standards and guidelines provide minimum standards for the indicators. Through the LAC process, these standards may become more specific. Standards derived from the Forest Plan were used as guidelines in determining the number of units per acre and the acceptable capacity based on PAOT's. Other standards were developed based on resource specialist and team input. Public participation and specialist input is important in this step. Group interaction enables the agency to gain an understanding of what the public expects. It also provides an opportunity for the public to better understand some of the management constraints facing the agency.

The LAC process for developing alternatives is specific to large areas. More important than following a process is to assure that the alternatives developed meet the project objectives and address the issues. When dealing with a limited area such as Ilium Valley, it may be more appropriate to develop alternatives based on management actions rather than opportunity classes. Alternatives of this nature are more closely associated with alternatives developed through the NEPA process at the project level.

Applying LAC as a guideline for planning can be effective. Elements of the process that may not be appropriate to a specific area or project should be recognized so that the process can be adapted accordingly. As in

applying ROS class designations, the LAC process should remain flexible, allowing for more diverse applications of the process.

In addition to flexibility in applying the LAC process, flexibility in meeting style may also be beneficial when working with the public. The LAC steps are defined to progress in a logical fashion. During work sessions, information may arise which is not directly applicable to the current step being discussed. Significant information and ideas may be lost if the facilitator insists on "sticking with the program". It seemed to be the tendency of this group to identify problems/concerns and immediately move on to possible solutions, without first defining indicators and standards. The management actions proposed were noted at the time they were conceived. As the indicators were identified, it was helpful to cross-reference any proposed management action to determine if the issues were adequately addressed by the indicators selected.

Initial planning for the proposed CIP project, which included development at Mary E, Sheep Corrals, and the South Fork, met with public concern about the level of developments proposed in the valley. The decision by the Forest Supervisor to permit only day use in the valley provided relief for the residents, but increased concerns by adjacent land managing agencies and Forest Service field personnel regarding implications of such a management action (i.e. displacing users). The proposals developed by this team attempt to address the concerns expressed by the public and the Forest resource specialists.

LAC and ROS are useful tools in providing direction for developing management plans from the project to the Forest level. An integral part of applying the LAC process is public participation. LAC allows for participation throughout the process instead of only at the beginning and

end as is common in the NEPA process. Active roles in planning a project offers the public and the agency an opportunity for greater understanding and makes the project more personal for those participating. Active participation could provide the means to attain the support needed to make a project successful. In addition, employing the assistance of a local advisory group lends familiarity to potential partnerships that may not otherwise be recognized by agency personnel. The LAC process can be used to promote this type of public participation.

Literature Cited

Bright, Julie A. (1986) Hiker Impact on Herbaceous Vegetation Along Trails in an Evergreen Woodlands of Central Texas. Biological Conservation 36: 53-69.

Clark, R.N. and G.H. Stankey. (1979) The Recreation Opportunity Spectrum: A Framework for Planning, Management, and Research. USDA Forest Service General Technical Report PNW-98: 1-32.

Cole, D.N. (1982) Wilderness Campsite Impacts: Effect of Amount of Use. USDA Forest Service Research Paper INT-284: 1-34. Intermountain Forest and Range Experiment Station, Missoula, MT.

Cole, D.N. (1985) Recreational Trampling Effects on Six Habitat Types in Western Montana. USDA Forest Research Paper INT-350: 1-43. Intermountain Forest and Range Experiment Station, Missoula, MT.

Cole, D.N. and R.K. Fichtler. (1983) Campsite Impact on Three Western Wilderness Areas. Environmental Management (7)3: 275-288.

Frissel, Sidney S. and D.P. Duncan. (1965) Campsite Preference and Deterioration in the Quetico-Superior Canoe Country. Journal of Forestry (63)

Frissell, S.S., R.G. Lee, G.H. Stankey, E.H. Zube. (1980) A Framework for Estimating the Consequences of Alternative Carrying Capacity Levels in Yosemite Valley. Landscape Planning. (7): 151-170.

Heywood, J.L., J.E. Christensen, G.H. Stankey. (1991) The Relationship Between Biophysical and Social Setting Factors in the Recreation Opportunity Spectrum. Leisure Sciences (13)3: 239=246.

James, T.D.W., D.W. Smith, E.E. Mackintosh, M.K. Hoffman, P. Monti. (1979) Effects of Camping Recreation on Soil, Jack Pine, an Understory Vegetation in a Northwestern Ontario Park. Forest Science (25)2: 333-349.

Kuss, Fred R. and J.M. Morgan III. (1984) Using the USLE to Estimate the Physical Carrying Capacity of Natural Areas for Outdoor Recreation Planning. Journal of Soil and Water Conservation (39)6: 383-386.

Manning, R.E. (1986) Studies in Outdoor Recreation. Oregon State University Press, Corvallis, OR.

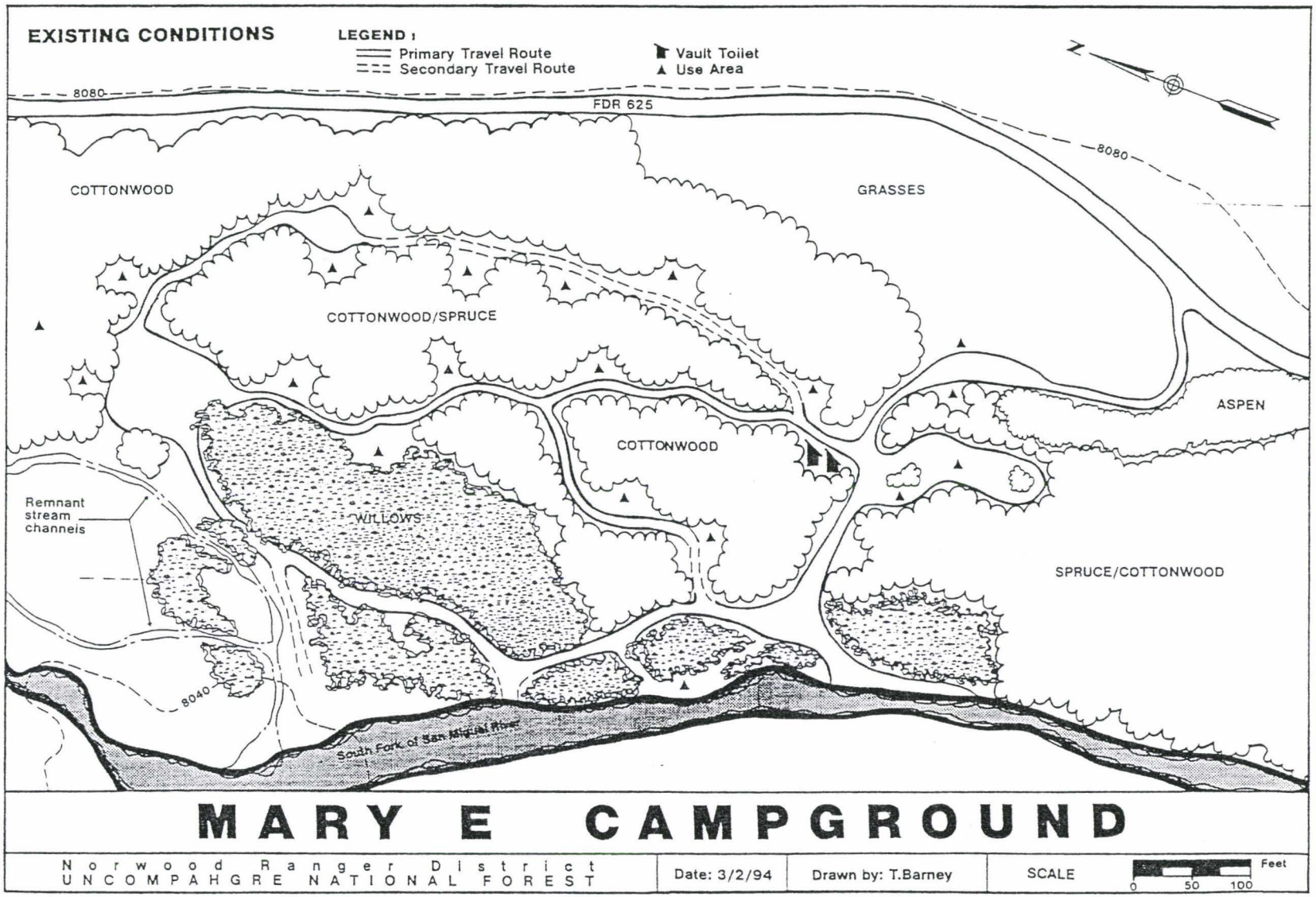
Merriam, L.C. and C.K. Smith. (1974) Visitor Impact on Newly Developed Campsites in the Boundary Waters Canoe Area. Journal of Forestry (72)10: 627-630.

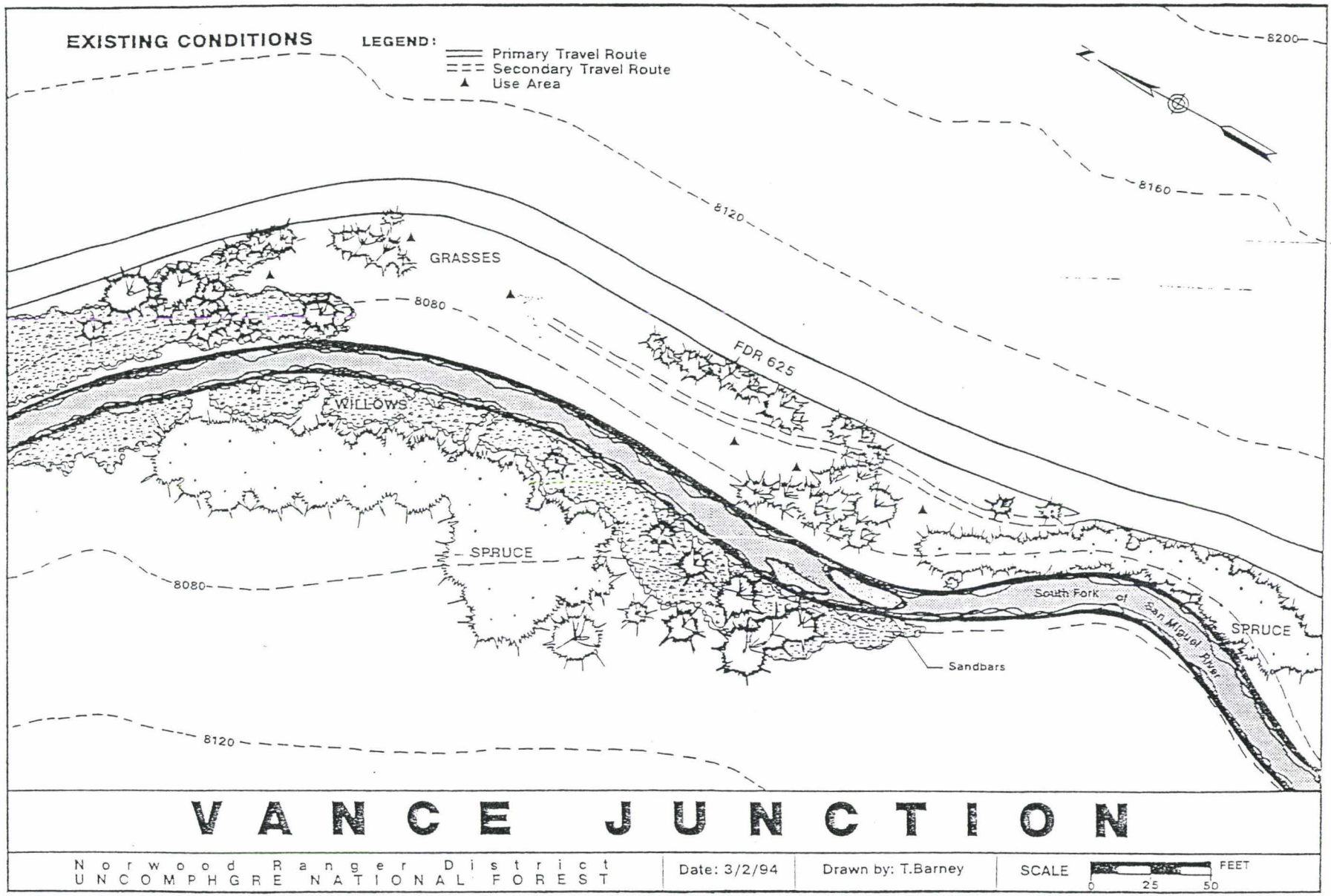
Settergren, C.D. and D.N. Cole. (1970) Recreation Effects on Soil and Vegetation in the Missouri Ozarks. Journal of Forestry (68)4: 231-233.

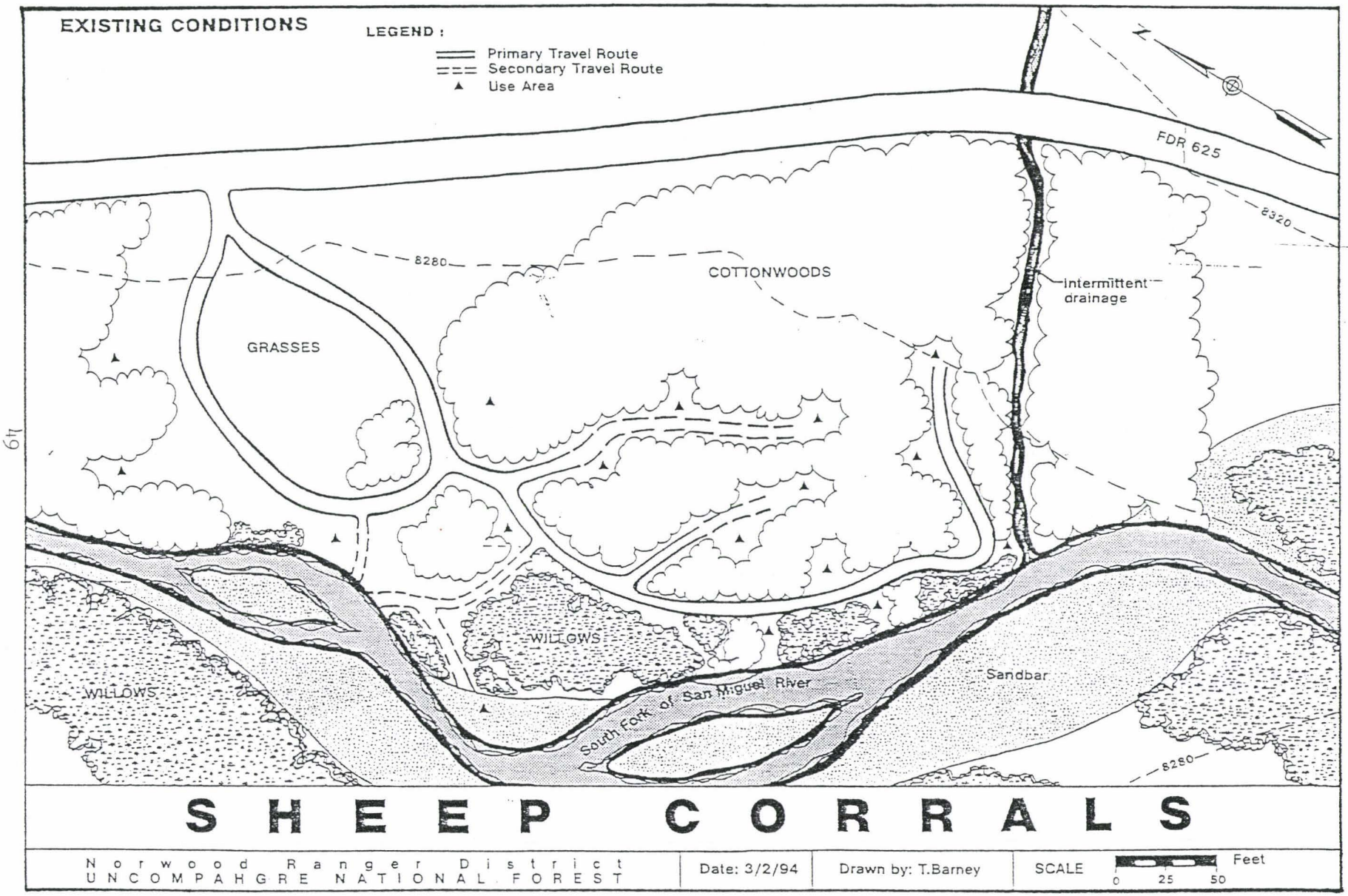
Stankey, G.H., D.N. Cole, R.C. Lucas, R.C. Lucas, M.E. Petersen, S.S. Frissell. (1985) The Limits of Acceptable Change (LAC) System for Wilderness Planning. USDA Forest Service General Technical Report INT-176: 1-37. Intermountain Forest and Range Experiment Station Ogden, UT.

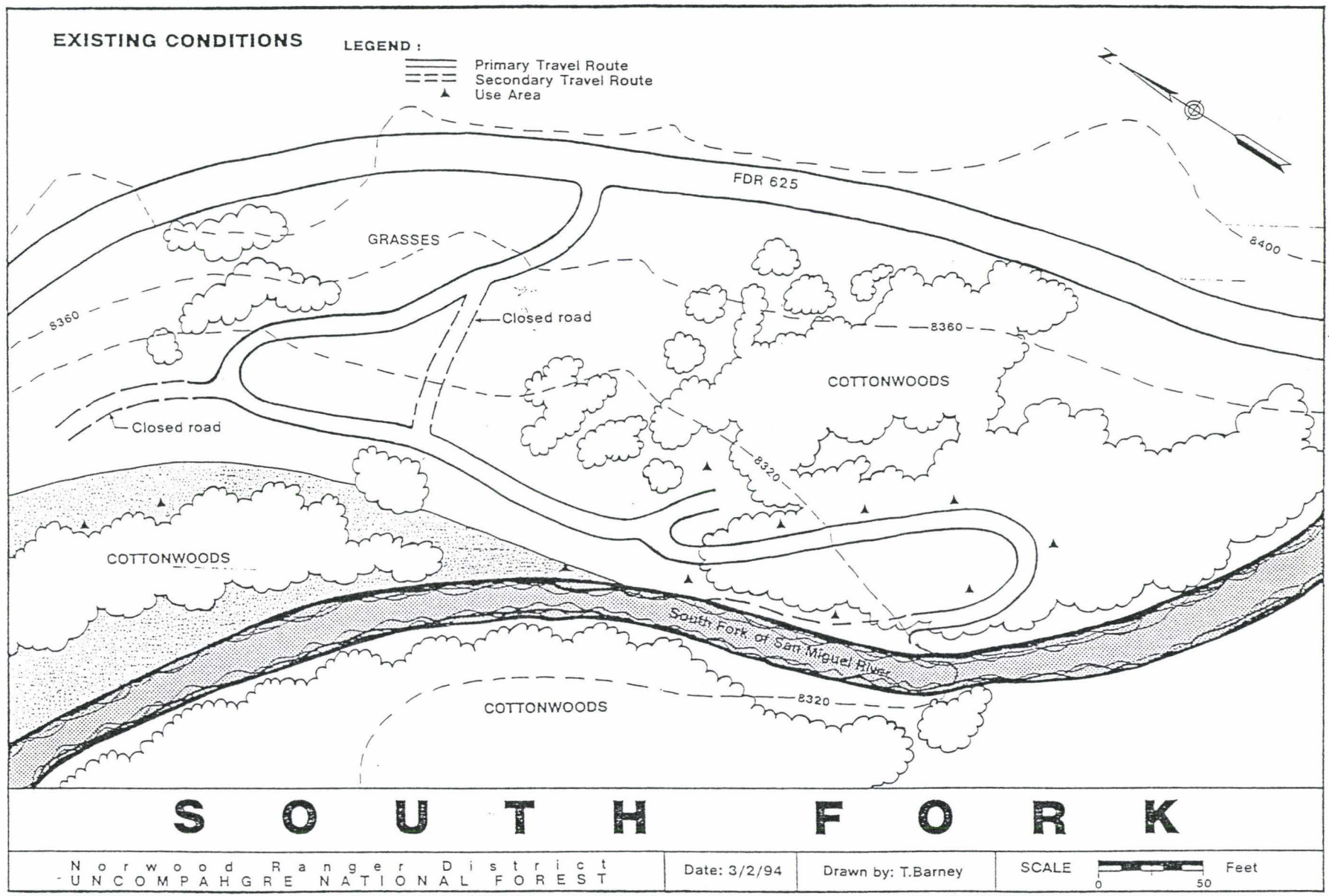
Virden, R.J. and R.C Knopf. (1989) Activities, Experiences, and Environmental Settings: A Case Study of Recreation Opportunity Spectrum Relationships. Leisure Sciences. (11): 159-176.

Appendix A


EXISTING CONDITIONS
LEGEND :
Primary Travel Route
Secondary Travel Route
Vault Toilet
Use Area
N
8080
FDR 625
8080
COTTONWOOD
GRASSES
COTTONWOOD/SPRUCE
ASPEN
COTTONWOOD
Remnant stream channels
WILLOWS
SPRUCE/COTTONWOOD
8040
South Fork of San Miguel River
MARY E CAMPGROUND
Norwood Ranger District
UNCOMPAHGRE NATIONAL FOREST
Date: 3/2/94
Drawn by: T.Barney
SCALE
0
50
100
Feet


EXISTING CONDITIONS
LEGEND:
Primary Travel Route
Secondary Travel Route
Use Area
8200
8160
8120
8080
GRASSES
FDR 625
WILLOWS
SPRUCE
8080
South Fork of San Miguel River
SPRUCE
Sandbars
8120
VANCE JUNCTION
Norwood Ranger District
UNCOMPHGRE NATIONAL FOREST
Date: 3/2/94
Drawn by: T.Barney
SCALE
0
25
50
FEET


EXISTING CONDITIONS
LEGEND :
Primary Travel Route
Secondary Travel Route
Use Area
FDR 625
8320
8280
COTTONWOODS
Intermittent drainage
GRASSES
WILLOWS
WILLOWS
South Fork of San Miguel River
Sandbar
8280
SHEEP CORRALS
Norwood Ranger District
UNCOMPAHGRE NATIONAL FOREST
Date: 3/2/94
Drawn by: T.Barney
SCALE
0 25 50
Feet


EXISTING CONDITIONS
LEGEND :
Primary Travel Route
Secondary Travel Route
Use Area
N
FDR 625
GRASSES
8400
8360
Closed road
8360
COTTONWOODS
Closed road
8320
COTTONWOODS
South Fork of San Miguel River
8320
COTTONWOODS
S O U T H F O R K
Norwood Ranger District
UNCOMPAHGRE NATIONAL FOREST
Date: 3/2/94
Drawn by: T.Barney
SCALE
0
50
Feet

Appendix B

SCORECARD FOR SERAL STAGE — R-2 2060-TD(9/88)

BLUE SPRUCE RIPARIAN (Ecological Type: Pipu/Amal-alluvial-high gradient) — COLORADO-WYOMING

PERSON(S) MAKING RATING: _____ DATE: __/__/19__

KEY-IDENTIFICATION R- F -D -M-YR-UNIT -SAMPLE	1/4	1/4	S	T	R	ASPECT	SLOPE, PER CENT	ELEV ft	OWNERS+	RIS	SITE+
2-											

ECOLOGICAL TYPE CODE P. A.	SOIL	LAND	ALLOTMENT CODE	RIP PCT	WTL PCT	GAWS LINK	WATERSHED	TRANS DIR	CHANL TYPE	CVR CLASS 7 10

SOIL SURVEY AREA: PEDON CODE: _____

SOIL MAP UNIT NAME: GT.GP. SUBGP. PART. MIN REA TMP MOIS OTHER

GF	SPECIES	SAMPLES/MICROPLOTS 1 2 3 4 5 6 7 8 9 0	AVG. COVER	MAX. SCORE	SCORE	OVER	FINAL SCORE	COMMON NAME
T	Pipu			47		+	=	blue spruce
	Abla			10			=	subalpine fir
	Poan3			3			=	narrowleaf cottonwood
	Potr1			6			=	aspen
				2			=	other trees
	Swse(Cost)			53		+	=	redosier dogwood
	Alint			14		+	=	thinleaf alder
	Amal			6		+	=	Saskatoon serviceberry
	SALI			52		+	=	willow spp.
	RIBE			17		+	=	currant spp.
	Pefl(Pofr)			1			=	shrubby cinquefoil
	ARTE			0			=	sagebrush spp.
			)	10			=	other shrubs
			)					
G	Caca			27		+	=	bluejoint reedgrass
	CARE			10		+	=	sedge spp.
	POA			2			=	bluegrass (exotic)
			)					
			)					
			)	5			=	other grasses & grasslikes
			)					
F	Eqar			8		+	=	horsetail
	Smst			6		+	=	star solomon-plume
	Getr2			4		+	=	sweetscented bedstraw
	Hesp			5		+	=	cow-parsnip
	Acru			7			=	red baneberry
	OSMO			7		+	=	sweetroot spp.
	ANTE			0			=	pussytoes spp.
	Cear			0			=	mouse-ear chickweed
	CIRS			0			=	thistle spp.omon-plume
	Taof			1			=	dandelion
			)					
			)					
			)					
			)	5			=	other forbs
			)					
			)					
			)					
			)					
	TOTAL COLUMNS: T =			..... S =				
	LITTER			98		+	=	
	BARE SOIL			2		-	=	
	TOTAL COLUMNS: X =			..... Y =				

$L = \frac{Y}{X} =$ _____ %

SERAL SCORE $= \frac{S}{T}^{b} =$ _____ = D = _____ % SERAL STAGE (TABLE 1): _____

b. If <0, enter zero.

LAND RATING (R2-2060-13) = E = _____ % ECOLOGICAL SCORE $= \frac{D + E}{2} = \frac{\quad + \quad}{2} =$ _____ % RATING CODE (TABLE 2) = _____

RESOURCE VALUE RATINGS FOR VEGETATION

A. LIVESTOCK (SCORE FORAGE SPECIES ONLY)

SPECIES	AVG. COVER	KIND: ____ SCORE	KIND: ____ SCORE
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
_____	_____	= _____	= _____
TOTALS = N =		_____	.... _____
FORAGE VALUE = N/R =		_____	_____
RATING (TABLE 2):		_____	_____

SPECIES	CATTLE
R=	142
FORAGE PLANTS	

B. WILDLIFE

SPECIES RATED->	(LARGE MAMMAL)	(OTHER SPECIES)
COVER	LAYER — WOODY COVER (ALL)[a] — SCORE	COVER RATING[c] = _____ %
	> 2 m _____ x 0.7 = _____	
	1-2 m _____ x 0.2 = _____	
	< 1 m _____ x 0.1 = _____	
	TOTAL..... _____ A	

a. canopy cover of all woody species

FOOD	SPECIES	CANOPY COVER	SCORE[b]	SCORE[b]
	_____	_____	= _____	= _____
	_____	_____	= _____	= _____
F	_____	_____	= _____	= _____
O	_____	_____	= _____	= _____
O	_____	_____	= _____	= _____
D	_____	_____	= _____	= _____
	_____	_____	= _____	= _____
	_____	_____	= _____	= _____
	_____	_____	= _____	= _____
	_____	_____	= _____	= _____
	_____	_____	= _____	= _____
	_____	_____	= _____	= _____
	TOTALS		_____ B	.... _____ B

b. only score spp. used as food

c. Use rating system appropriate to wildlife species being rated.

Special habitats present: _____

1. GUIDELINES FOR SERAL STAGES

SCORE	SERAL STAGE	ABBREVIATIONS	
85-100%	Potential Natural Community	PNC	= P_
70-85%	Late Seral	LS)	= L_
60-70%	Late (Upper) Midseral	LM)	
40-60%	Midseral	MS	= M_
30-40%	Early Midseral	EM)	= E_
15-30%	Early Seral	ES)	
0-15%	Very Early Seral	VE	= V_

2. GUIDELINES FOR RESOURCE VALUE RATING

SCORE	RATING	ABBREV.
80-100	High	H
60-80	Mod. High	J
40-60	Mod. Low	K
20-40	Low	L
<20	Very Low	M

3. GUIDES FOR SATISFACTORY LIVESTOCK COND. (Circle one)

FORAGE COND.	SERAL STAGE (ECOLOGICAL STATUS) PNC	L	M	E	VE
E(H)	S	S	S	U	U
G(J)	S	S	S	U	U
F(K)	S	S	S^-Uv	U	U
P(L)	S	S^-Uv	U	U	U
V(M)	U	U	U	U	U

Abbreviations:

- S Satisfactory Livestock Condition
- U Unsatisfactory Livestock Condition
- ^ Upward)
- - Stable) - trend in Forage Condition
- v Downward)

Note: A site that is shown as riparian in the Forest plan (M. A. 9A), or one that is more than 50% (by acreage) riparian, must be Upper Midseral (LM) or better to rate as Satisfactory.

SCORECARD FOR SERAL STAGE R-2 2060-UC (8/90)

Narrowleaf cottonwood/thinleaf alder or /Pacific willow--well drained--montane riparian w CO

KEY-IDENTIFICATION R- F - D - M -YR -UNIT -SAMPLE	1/4	1/4	S	T	R	ASP-ECT	SLOPE %	ELEV ft	RIS	SITE+
2-_ _-_ _-_ _-_ _-_ _-_ _ _-_ _ _										

ECOLOGICAL TYPE CODE P. A.	SOIL	LAND	OWNERS+	ALLOTMENT CODE	RIP PCT	WETLA PCT	GAWS LINK	WATER-SHED	TRANS DIR	CHANL TYPE
_ _ _ _ _-_										_-_

STATE-COUNTY: _ _ \| _ _ _ SAMPLE DATE: _ _/_ _/19_ _

GF	SPEC.	CANOPY COVER[a]	MAX	SCOR	OVER	UNDER		FINAL SCORE	COMMON NAME
T	POAN3	____	48	____	+ ____		=	____	narrowleaf cottonwood
	JUSC	____	4	____			=	____	Rocky Mountain juniper
	________ ________	____) ____)	2	____			=	____	other tree spp.[b]
S	SALUL	____	15	____	+ ____	- ____	=	____	Pacific willow
	SALIX	____	21	____	+ ____	- ____	=	____	other willow spp.
	AlINT	____	3	____	+ ____		=	____	thinleaf alder
	SWSE	____	6	____	+ ____		=	____	redosier dogwood
	CRATA	____	29	____	+ ____		=	____	hawthorn spp.
	ROWO	____	17	____			=	____	Woods rose
	RIBES	____	1	____	+ ____		=	____	currant spp.
	DIIN	____	4	____	+ ____		=	____	twinberry
	PEFL15	____	1	____			=	____	shrubby cinquefoil
	ARTEM	____	0	____			=	____	sagebrush spp.
	________ ________	____) ____)	10	____			=	____	other shrub spp.
G	CACA	____	11	____	+ ____		=	____	bluejoint reedgrass
	CAREX	____	35	____	+ ____		=	____	sedge spp.
	POPA2	____	17	____	+ ____		=	____	fowl bluegrass
	DECE	____	25	____	+ ____		=	____	tufted hairgrass
	ELRE3	____	1	____			=	____	quackgrass
	POPR/CO	____	0	____			=	____	exotic rhizomat. bluegrass
	________ ________ ________	____) ____) ____)	15	____			=	____	other grasses-grasslikes
F	EQAR	____	3	____	+ ____		=	____	horsetail
	MAST	____	7	____	+ ____		=	____	star solomon-plume
	HESP	____	3	____	+ ____		=	____	cow-parsnip
	OSMOR	____	2	____	+ ____		=	____	sweetroot spp.
	VIAM/LATHY	____	4	____	+ ____		=	____	American vetch/peavine spp.
	ANTEN	____	0	____			=	____	pussytoes spp.
	CEAR	____	0	____			=	____	mouse-ear chickweed
	CIRSI	____	0	____			=	____	thistle spp.
	TAOF	____	1	____			=	____	dandelion
	CACO6	____	5	____	+ ____		=	____	heartleaf bittercress
	GEUM-	____	3	____	+ ____		=	____	avens spp.
	________ ________ ________ ________ ________	____) ____) ____) ____) ____)	15	____			=	____	other forb spp.
TOTALS	T=		....				S=		

LITTER/DF*	____	98	____	+ ____	=	____
BARE SOIL*	____	0	____	- ____	=	____
TOTALS X =			........Y =			

$L = \frac{Y}{X} =$ ________ %

*.These should add to 100%.

GRAV <1cm* ____
COBL 1-8 * ____
ROCK >8cm* ____
MOSS/SOL ____
LICH/SOL ____
________ ____
________ ____

SERAL SCORE $= \frac{S}{T} =$ ______ = ______ % = D. ECOL.STATUS (TABLE 1) : ______

ECOL. SCORE $= \frac{D + W}{2} = \frac{\_\_\_ + \_\_\_}{2} =$ ______ % RATING (TABLE 2) : ______

PERSON(S) MAKING RATING:

FORM DATE: _ _/_ _/19 _ _

LIVESTOCK FORAGE VALUE
(Only score forage spp.)

KIND---> PLANT SP.	__ SCORE	__ SCORE
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
________	____	____
TOTAL P =	____	____
FORAGE VALUE $= \frac{P}{R} =$	____	____
RATING = (TAB.2)	__	__

KIND	P. C.	R
C	Any	141

KIND FORAGE SPECIES

C All grasses & grass-likes; forbs: MAST, THFE, VIAM, HESP, VAED, OSMOR.

a. Use Form R2-2060-2 or equivalent

b. If PIPU is regenerating, use PIPU scorecard

CHANNEL STABILITY = F = ______ %
(Form R2-2060-13)

W = E if no channel present,
W = F if channel present

SOIL AND LAND CONDITION (Write value from within range in parentheses on one blank at right)

-No evidence of soil movement. Plant and litter cover effective in protecting soil; runoff is clear, no piling up of litter behind plants; drainages completely stabilized..... (17-20) ____

-Soil movement slight. Erosion difficult to recognize. May be evidence of past accelerated erosion, but now stabilized; plant and litter cover effective in protecting soil; plant pedestals very few with sloping sides. Some litter may be dammed against vegetation; trampling displacement slight; no noticeable compaction..... (13-16) ____

-Soil movement moderate. Erosion discernible; although accelerated soil movement occurs, it is usually in spots, with stabilized soil elsewhere. Considerable bare soil; some plant pedestals, few are steep-sided; erosion pavement forming with occasional exposed pebbles; occasional alluvial deposit and rills present; gullies, if present, not raw, and trampling noticeable but not excessive..... (9-12) ____

-Soil movement advanced. Plant cover and litter not effective in preventing soil movement. Much bare soil; numerous steep-sided plant pedestals; deposits common; gullies with raw sides, trampling displacement and compaction prevalent; runoff muddy..... (5-8) ____

-Soil movement severe. Plant cover inadequate; litter lacking; subsoils exposed in many places; pedestals of stronger perennials almost completely eroded away; erosion pavement complete on stony soils; rills and alluvial deposits numerous; gullies with raw sides; summer storm runoff muddy, heavy rains often cause miniature mud flows.. (0-4) ____

SOIL AND LAND SCORE = $\frac{L + M}{120}$ = E = _____%; RATING CODE (TABLE 2) : _____

SOIL STABILITY = M = _____

1. GUIDELINES FOR ECOLOGICAL STATUS (SERAL STAGE)

SERAL SCORE	SERAL STAGE	ABBREVIATION
85-100%	Potential Natural Community	PN = P_
70-85%	Late Seral	LS) = L_
60-70%	Late (Upper) Midseral	LM)
40-60%	Midseral	MS = M_
30-40%	Early Midseral	EM) = E_
15-30%	Early Seral	ES)
0-15%	Very Early Seral	VE = V

2. GUIDELINES FOR VALUE RATINGS

VALUE SCORE	VALUE RATING	VALUE ABBREV.	[OLD RANGE CONDITION]	
80-100%	High	H	[E]	DO NOT USE
60-80%	Moderately High	J	[G]	
40-60%	Moderately Low	K	[F]	
20-40%	Low	L	[P]	
<20%	Very Low	M	[V]	

GUIDELINES FOR SATISFACTORY LIVESTOCK CONDITION (Circle one letter)

FORAGE VALUE	SERAL STAGE (ECOLOGICAL STATUS) P	L	M	E	V
H[E]	S	S	S	U	U
J[G]	S	S	S	U	U
K[F]	S	S	S^-Uv	U	U
L[P]	S	S^-Uv	U	U	U
M[V]	U	U	U	U	U

S Satisfactory; U Unsatisfactory; ^ upward trend; v downward; - stable.

SHRUB CONDITION - check one blank.

- Palatable shrubs dominant, a variety of shrubs in all size classes, linear growth, use and damage barely noticeable..... 4 ____
- Palatable shrubs dominant, up to 25% of shrub cover intermediate & unpalatable, linear growth common with light browsing & rubbing.... 3 ____
- Palatable shrubs <15% of shrub cover, intermediates dominant with up to 20% unpalatables, palatable shrubs heavily damaged from browsing and rubbing, few young plants..... 2 ____
- Intermediate and unpalatable shrubs >75% of shrub cover, palatable shrubs rare, heavy damage on intermediates and palatables, no regeneration of palatables..... 1 ____
- Few to no intermediates, and those smaller than normal, or else intermediates dominant, or shrubs lacking or very sparse..... 0 ____

Sources:

Plant Associations: POAN3/ALINT, POAN3/SALUL. If blue spruce (PIPU) is regenerating, use PIPU-POAN3 scorecard.

Soils:

USDA FOREST SERVICE. CHANNEL STABILITY EVALUATION
R-2 2060-13 (9/90)

PERSON(S) TAKING SAMPLE	DATE MO|DA|YR	STATE-COUNTY	KEY-IDENTIFICATION R-FO-D|-M-YR-UNIT-SAMPLE	OWNERS	UM⁹ Met Eng
			2		

RIP|WTL PCT	GAWS LINK	ELEVATION	¼ ¼ S T R	STREAM GRAD. ORDER	WATERSHED MAJOR|PROJECT	CHAN TYPE

Circle one number on each lettered line. Numbers appear to the right of descriptions.

C¹	K²	EXCELLENT (HIGH)	+	GOOD (MOD. HIGH)	+	FAIR (MOD. LOW)	+	POOR (LOW)	+
U	A	Bank slope <30%	2	Bank slope 30-40%	4	Bank slope 40-60%	6	Bank slope >60%	8
U	B	No evidence of past or potential future mass wasting into channel	3	Infrequent and/or very small. Mostly healed over. Low future potential	6	Moderate frequency and size, with some raw spots eroded by water during high flows	9	Frequent or large, causing sediment nearly yearlong or imminent danger of same	12
U	C	Essentially absent from channel area	2	Present but mostly small twigs and limbs	4	Present, volume and size both increasing	6	Moderate to heavy amounts, predominantly larger sizes	8
U	D	Live cover >90%. Vigor and variety suggests a deep, dense, soil-binding root mass	3	Live cover 70-90%. Fewer plant species of lower vigor suggests a less dense or less deep root mass	6	Live cover 60-70%. Lower vigor and still fewer species form a somewhat shallow and discontinuous root mass	9	Cover <50% with fewer species and less vigor, indicating poor, discontinuous, shallow root mass	12
L	E	Ample for present and some increases. Peak flows contained. W/D <7	1	Adequate. Overbank flows rare. W/D = 8-15	2	Barely contains present peaks. Occasional overbank floods. W/D 15-25	3	Inadequate. Overbank flows common. W/D >25	4
L	F	>65% with large angular boulders >12" numerous	2	40-65% mostly small boulders to cobbles, 6-12"	4	20-40% mostly in 3-6" diam. class	6	<20% rock fragments of gravel sizes, 1-3" or less	8
L	G	Rocks and old logs firmly imbedded. Flow pattern without cutting or deposition. Pools and riffles stable	2	Some present, causing erosive cross currents and minor pool filling. Obstructions and deflectors newer and less firm	4	Moderately frequent, moderately unstable obstructions and deflects move with high water causing bank cutting and filling of pools	6	Frequent obstructions and deflectors cause bank erosion yearlong. Sediment traps full, channel migration occurring	8
L	H	Little or none evident. Infrequent raw banks <6" high generally	4	Some, intermittently at outcurves and constrictions. Raw banks may be up to 12"	8	Significant. Cuts 12-24" high. Root mat overhangs and sloughing evident	12	Almost continuous cuts, some over 24" high. Failure of overhangs frequent	16
L	I	Little or no enlargement of channel or point bars	4	Some new increase in bar formation, mostly from coarse gravels	8	Moderate deposition of raw gravel and coarse sand on old and some new bars	12	Extensive deposits of predominantly fine particles. Accelerated bar development	16
B	J	Sharp edges and corners, plane surfaces roughened	1	Rounded corners and edges, surfaces smooth and flat	2	Corners and edges well rounded in two dimensions	3	Well-rounded in all dimensions, surfaces smooth	4
B	K	Surfaces dull/darkened/stained, generally not bright	1	Mostly dull, but may have up to 35% bright surfaces	2	Mixture, 50:50 dull and bright ±15%, i.e., 35-65%	3	Predominantly bright, >65% exposed or scoured surfaces	4
B	L	Assorted sizes tightly packed and/or overlapping	2	Moderately packed with some overlapping	4	Mostly a loose assortment with no apparent overlap	6	No packing evident, loose assortment, easily moved	8
B	M	No size changes evident. Stable materials 80-100%	4	Distribution shift slight. Stable materials 50-80%	8	Moderate change in sizes. Stable materials 20-50%	12	Marked distribution change. Stable materials <20%	16
B	N	Less than 5% of the bottom affected by scouring and deposition	6	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools	12	30-50% affected. Deposits and scour at obstructions, constrictions, and bends	18	More than 50% of the bottom in a state of flux or change nearly yearlong	24
B	O	Abundant. Growth moss-like, dark green, perennial, in swift water too	1	Common. Algal forms in low velocity and pool areas. Moss here too and in swifter waters	2	Present but spotty, mostly in backwater areas. Seasonal blooms make rocks slick	3	Perennial types scarce or absent. Yellow-green, short-term bloom may be present	4
	XX	TOTALS ---------->	—		—		—		—
			EX		G		F		P

COMPONENT AND KEY (LINE) CODES

CO DE¹	COMPONENT	OLD NO.	NEW K²	EXPLANATION
U	Upper Banks	1	A	Bank slope
		2	B	Mass wasting or failure (existing or potential)
		3	C	Debris jam potential (floatable objects)
		4	D	Bank protection from vegetation
L	Lower Banks	5	E	Channel capacity
		6	F	Bank rock content
		7	G	Obstructions, flow deflectors, and sediment traps
		8	H	Cutting
		9	I	Deposition
B	Bottom	10	J	Rock angularity
		11	K	Brightness
		12	L	Consolidation or particle packing
		13	M	Bottom size distribution and percent stable materials
		14	N	Scouring and deposition
		15	O	Clinging aquatic vegetation (moss and algae)

EX _____ + G _____ + F _____ + P _____ = S _____

152 - S
---------- = _____.__% = E
114

	SCORE (S)	SCORE (E)	PFAN. RAT.	RESOURCE VALUE
	38- 60	80-100	E	H High
	61- 83	60- 80	G	J Mod. High
	84-106	40- 60	F	K Mod. Low
	107-129	20- 40	P	L Low
	130-152	<20	(V)	M Very Low

	WIDTH	DEPTH
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
TOTAL→	_____	_____
AVERAGE→	_____	_____

WIDTH/DEPTH RATIO = _____.__%

SIZES OF BOTTOM MATERIALS CLASS DESCRIP.	COVER
Exposed bedrock	_____%
Large boulders >3'	_____%
Small boulders 1-3'	_____%
Large rubble 6-12"	_____%
Small rubble 3-6"	_____%
Coarse gravel 1-3"	_____%
Fine gravel 0.1-1"	_____%
Sand,silt,clay,muck	_____%
TOTAL→	100%

AC = _____ ft α=v.grad.=_____%

ABC = _____ ft β = α÷(ABC/AC)

Sinuosity = ABC/AC = ___.__ β=stream grad.=_____%

Reference. Pfankuch, D. J. 1978. Stream reach inventory and channel stability evaluation. USDA Forest Service, Northern Region, Missoula, MT, 26 pp.

CHANNEL TYPE	GRADIENT %[1]	SINUOSITY[2]	ENTRENCHMENT (width:depth of channel)[3]	DOMINANT SIZE OF PARTICLES IN CHANNEL[4]	VALLEY CONFINEMENT (width of floodplain:channel)[5]	LANDFORM FEATURES[6], SOILS, STABILITY
A1 A1-a	4-10% ≥10%	1.0-1.1	V. Deep (≤10)	Bedrock	Well Confined (≤1.5)	Deeply incised bedrock drainageway with steep sideslopes and/or vertical rock walls
A2 A2-a	4-10% ≥10%	1.1-1.2	V Deep (≤10)	Large and small boulders with mixed cobble	Well Confined (≤1.5)	Steep sideslopes with predominantly stable materials
A3 A3-a	4-10% ≥10%	1.1-1.3	V. Deep (≤10)	Small boulders, cobble, coarse gravel	Well Confined (≤1.5)	Steep, depositional features with predominantly ***coarse***-textured soils. Debris avalanche is the predominant erosional process. Stream-adjacent slopes are rejuventated with extensive exposed mineral soil
A4 A4-a	4-10% ≥10%	1.2-1.4	V. Deep (≤10)	Predominantly gravel, sand, and some silts	Well Confined (≤1.5)	Steep side slopes with mixture of either depositional landforms with fine-textured soils such as glacofluvial or glaciolacustrine deposits or highly erodible residual soils such as grussic granite, etc. Slump-earthflow and debris avalanche are dominant erosional processes. Stream-adjacent slopes are rejuvenated
A5 A5-a	4-10% ≥10%	1.2-1.4	V. Deep (≤10)	Silt and/or clay bed and bank materials	Well Confined (≤1.5)	Moderate to steep side slopes. Fine-textured cohesive soils, slump-earthflow erosional processes dominate
B1-1	1.5-4.0	1.3-1.9	V. Deep (≥10)	Bedrock bed, banks, cobble, gravel, some sand	Moderate (1.5-2.5)	Bedrock controlled channel with coarse-textured depositional bank materials
B1	2.5-4.0	1.2-1.3	Deep (5-15)	Predominantly small boulders, very small cobbles	Moderate (1.5-2.5)	Moderately stable, coarse-textured resistant soils materials. Some coarse river terraces
B1-b	1.0-2.4	1.2-1.3	Deep (10-20)	Boulder	Moderate (1.5-2.5)	Boulder deposition, very coarse alluvium
B2	1.5-2.5	1.3-1.5	Deep (8-20)	Large cobble mixed with small boulders and coarse gravel	Moderate (1.5-2.5)	Coarse-textured, alluvial terraces with stable, moderately steep sideslopes
B2-b	1.0-1.5	1.3-1.5	Deep (8-20)	Large cobble	Moderate (1.5-2.5)	Gentle relief, coarse alluvium
B3	1.5-4.0	1.3-1.7	Deep (8-20)	Cobble bed with mixture of gravel and sand, some small boulders	Well confined (≤1.5)	Glacial outwash terraces and/or rejuvenated slopes. Untable, moderate to steep slopes. Unconsolidated, ***coarse***-textured unstable banks. Depositional landforms
B4	1.5-4.0	1.5-1.7	Deep (8-20)	Very coarse gravel with cobble, mixed sand, and finer material	Well confined (≤1.5)	Relatively fine river terraces. Unconsolidated ***coarse to fine*** depositional material. Steep sideslopes. Highly unstable banks
B5	1.5-4.0	1.5-2.0	Deep (8-25)	Silt/clay	Well confined (≤1.5)	Cohesive ***fine textured*** soils. Slump-earthflow erosional processes
B6	1.5-4.0	1.8-2.8	Moderate (0.1-8.0)	Predominantly small cobble with large gravel mixed with sand	Slightly (≥2.5)	Narrow and deep meandering coarse-grained channel with well-vegetated banks and with accessible floodplain
C1-1	≤1.5	1.5-2.5	Shallow (≥10)	Bedrock bed; gravel, sand, or finer banks	Poorly (≥2.5)	Bedrock controlled channel with depositional fine-grained bank material
C1	1.0-1.5	1.5-2.0	Shallow (≥10)	***Small cobble*** bed with mixture of small boulders and coarse gravel	Poorly (≥2.5)	Predominantly coarse-textured, stable high alluvial terraces
C2	0.3-1.0	1.3-1.5	V. Shallow (15-30)	***Large cobble*** bed with mixture of small boulders and coarse gravel	Moderate (1.5-2.5)	Overfit channel, deeply incised in coarse alluvial terraces and/or depositional features
C3	≤1.0	1.8-2.4	Shallow (≥10)	***Gravel*** bed with mixture of small cobbles and sand	Slight (≥2.5)	Predominantly moderate- to fine-textured multiple low river terraces. Unstable banks, unconsolidated, noncohesive soils
C4	0.1-1.0	≥2.5	Medium (≥5)	***Sand*** bed with mixtures of gravel and silt (no bed armor)	Slight (≥2.5)	Predominantly fine-textured alluvium with low flood terraces
C5	≤1.0	≥2.5	Medium (≥5)	Silt/clay bed with mixtures of medium to fine sands (no bed armor)	Slight (≥2.5)	Low, fine-textured alluvial terraces, delta deposits, lacustrine, loess, or other fine-textured soils. Predominantly cohesive soils
C6	≤1.0	≥2.5	Deep (≤5)	Sand bed with mixture of silt and some gravel	Slight (≥2.5)	(Same as C4), but with more resistant banks
D1	≥1.0	Braid	V. Shallow	Cobble bed with mixture of coarse gravel and sand and small boulders	None (≥2.5)	Glacial outwash, coarse depositional material, highly erodible. Excess sediment supply of coarse size material
D2	≤1.0	Braid	V. Shallow	Sand bed with mixture of small to medium gravel and silts	None (≥2.5)	Fine-textured depositional soils, very erodible, excess of fine-textured sediment
F1	≤1.5	≥1.3	Shallow (10-40)	Bedrock bed with few boulders, cobble, and gravel	Total (≤1.5)	Flat gradient, confined meandering bedrock stream. Highly weathered bedrock where stream has been deeply incised
F2	≤1.5	≥1.3	Shallow (10-40)	Boulders with small amounts of cobbe, gravel, and sands	Total (≤1.5)	Flat gradient, confined meandering boulder bed stream. Weathered bedrock and/or very coarse depositional or residual material such as talus. Deep stream incision
F3	≤1.5	≥1.3	Shallow (10-40)	Cobble with gravel bed with locations of sands in depositional sites	Total (≤1.5)	Flat gradient, confined meandering cobble/gravel bed streams. Weathered bedrock or depositional coarse-grained terraces where stream is deeply incised
F4	≤1.5	≥1.3	Shallow (10-40)	Sand bed with smaller amounts of silt and gravel	Total (≤1.5)	Flat gradient, confined meandering sand bed channel. Highly weathered bedrock or fine-textured depositional and/or residual soil where the stream has been deeply incised
F5	≤1.5	≥1.3	Shallow (10-40)	Silt-clay bed and banks with smaller amount of sands	Total (≤1.5)	Flat gradient, confined meandering silt/clay streams. Highly weathered bedrock or fine-textured depositional and/or residual soil areas where stream has been deeply incised

1. Gradient is defined as the change in water surface slope (angle of the water surface). Measurement made on-site using rod and level.
2. Sinuosity is defined as the stream length defined by the valley length. Measurements could be made using USGS map or small-scale aerial photo; better is wheel-length along bank divided by taped baseline down-valley.
3. Width:depth ratio is defined as the bankfull width divided by the average bankfull depth. Measurements are made on-site, using 5-20 evenly-spaced points along the stream.
4. Dominant particle size is most appropriately determined through a pebble count but can be determined through visual observations. Should be observed at several points in the cross-section (bottom, lower banks, upper banks, terraces).
5. Confinement is defined as the ratio of the width of the floodplain divided by the bankfull channel width. Measurements are made on-site. Potential (total) confinement looks at the whole valley, to the outer edges of recent (geologically) deposition.
6. Adjacent landform features are determined visually.

Appendix C

Implementation Schedule

Spring 1994
- Develop user education plan
- Finalize Ilium Management Plan with Forest

Summer 1994
- Public notice for vehicular access restrictions and closures (Vance Junction and South Fork)
- Campsite condition surveys
- Partnership development
- Implement user education plan
- Inventory riparian conditions
- Bird survey
- Stream profile

Fall/Winter 1994
- Develop vegetation management plan
- Secure Forest funding

Spring 1995
- Close Vance Junction and South Fork to overnight use
- Concession operate Mary E and Sheep Corrals
- Implement vegetation management plan/riparian restoration (Vance Junction and South Fork)

Summer 1995
- Site survey

Fall 1995
- Site design plans/construction documents

Summer 1996
- Monitor condition surveys
  - campsite condition survey
  - riparian condition survey
  - stream profile
- Construct Mary E and Sheep Corrals

FSM 2300 - RECREATION, WILDERNESS, AND RELATED RESOURCE MANAGEMENT
WO AMENDMENT 2300-90-1
EFFECTIVE 6/1/90

2330.3 - Exhibit 1

Recreation opportunity spectrum class	Development scale	LEVELS OF SITE MODIFICATION
Primitive	1	Minimum site modification. Rustic or rudimentary improvements designed for protection of the site rather than comfort of the users. Use of synthetic materials excluded. Minimum controls are subtle. No obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access not provided or permitted.
Semi-primitive (Motorized and nonmotorized)	2	Little site modification. Rustic or rudimentary improvements designed primarily for protection of the site rather than the comfort of the users. Use of synthetic materials avoided. Minimum controls are subtle. Little obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access provided or permitted. Primary access over primitive roads. Interpretive services informal, almost subliminal.
Roaded natural	3	Site modification moderate. Facilities about equal for protection of site and comfort of users. Contemporary/rustic design of improvements is usually based on use of native materials. Inconspicuous vehicular traffic controls usually provided. Roads may be hard surfaced and trails formalized. ~~Development density about 3 family units per acre.~~ Primary access may be over high standard roads. Interpretive services informal, but generally direct.

Appendix D